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ABSTRACT

This document is a summary of remarks presented at a joint meeting of Agriculture and Natural Resources and Community Resource Development state leaders in 1989. The focus of the meeting was economic viability, rural extension and education, water quality, waste management, biotechnology, low-input sustainable agriculture (LISA), and rural families and communities. The titles of conference speeches include: "Public Policy and Profitability for U.S. Agriculture: The Need for Policy Education to Improve Farm Leadership"; "Focusing on Economic Survivability: A Response"; "Rural Development: Stating the Concern"; "Rural Families and Communities: Alternative Paths to the Future"; "Rural Development Strategies and Opportunities"; "Some Thoughts on Extension's Role in Rural Development Strategies and Alternatives"; "Waste Management: Stating the Concern"; "Waste Management: Problems and Solutions"; "Policy Directions in Waste Management"; "Water Quality and Agriculture: Why Are We Concerned?"; "Family and Community Concerns in Water Quality with a Focus on Agricultural Chemicals"; "Response on Water Quality"; "LISA and Biotechnology: Stating the Concern"; "Information and Education Needs for a Sustainable Agriculture"; "Biotechnology as It Relates to Economic Issues"; "Future of the Southern Regional Extension Program: Where Are We Headed?"; and "Response of the 4-H." (TES)

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Proceedings of a Regional Workshop

October 8-11, 1989
Williamsburg, Virginia

RC 017799

Proceedings

AGRICULTURE AND COMMUNITY DEVELOPMENT INTERFACE

Fort Magruder Inn
Williamsburg, Virginia
October 8-11, 1989

Joint Meeting of the Southern Region
State leaders for Agriculture and
Natural Resources and Community
Resource Development

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FOREWORD

This document is a summary of remarks presented at the joint meeting of the Agriculture and Natural Resources and Community Resource Development state leaders, held in Williamsburg, Virginia, October 8-11, 1989.

The focus of the meeting was on the topics of Economic Viability, Rural Families and Communities, Water Quality, Waste Management, Biotechnology, and Sustainable Agriculture. The Planning Committee organized the meeting in the following manner: (1) a state leader stated the concern, (2) speakers addressed the topic, (3) a state director responded to the speakers, and (4) the total group engaged in discussion. This format was followed for each of the issue areas.

The Program Planning Committee was composed of Curtis Absher (Kentucky), William A. Allen (Virginia), James L. App (Florida), Doss Brodnax (Southern Rural Development Center), Raymond Campbell (Oklahoma), Doug McAlister (Virginia), Delbert E. O'Meara (Virginia), and Paul D. Warner (Kentucky).

Paul D. Warner
Ray Campbell
Co-Chairs

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OVERVIEW OF CONFERENCE

William A. Allen, Virginia Tech, ANR Chair
James L. App, University of Florida, CRD Chair

The joint meeting between the ANR/CRD leaders is the second in a series that initially was established in Nashville, Tennessee, in 1986. The 1986 meeting was the first among the four program areas to set a joint agenda for the purpose of focusing on programs that have importance to both groups of Extension leaders. Because that meeting was successful, it was decided once again to convene the two groups and for the first time to invite the leaders of the home economics and 4-H/youth program areas. As we began to jointly explore the issues, concerns and common problems that we share in the Southern Region, it is important to remember that the program has been jointly planned by administrative officers, but is intended to meaningfully involve all the participants in the conference.

The planning committee limited their thrusts to three which they felt were the most important facing agriculture and natural resources and community resource development in the South: Economic Survivability; Environmental Concerns; and the Emerging Twin Issues of Low Input Sustainable Agriculture (LISA) and Biotechnology. Economic Survivability was recognized to have significant interactions with agriculture and rural families and to have impact on rural communities. Environmental concerns include the widely recognized concern for water quality and waste management. As our cities in the South urbanize, waste management may become an even more important issue both for the urban communities who produce it and for the rural communities who often are looked upon as a place of disposal. In the final analysis, both are closely linked and deserve our full attention. Finally, the emerging issues of low input sustainable agriculture and biotechnology and their implications for agriculture deserve attention. These newly emerging technologies will directly affect agriculture and indirectly will have lasting and lingering impacts on the people and the programs that we jointly serve.

It is for this reason that the format for the program is built on issues. We anticipate strong interaction among colleagues in other agencies, ourselves and a number of Extension directors from the Southern Region. You will note that we have assigned a moderator from among our programming group who will facilitate interaction and have assigned a substantial period of time for dialogue. We feel that this format will provide each of us the opportunity to explore the issues, to share in the formation of solutions and to become generally better acquainted with the important Extension issues that are emerging in the Southern United States. We hope that during the course of the week you will avail yourself to this opportunity, will expand your horizons and will help colleagues format solutions to their problems. The meeting should proceed with openness and complete candor, for it is through this process of give-and-take that we expand our abilities to meet the needs of our constituency.

Finally, Jim App and I would like to say thank you to Ray Campbell of Oklahoma and Paul Warner of Kentucky, who respectively are Vice Chairs for Agriculture and Natural Resources, and Community Resource Development. They have done an outstanding job of leading and coordinating the planning for the conference. We also would like to acknowledge contributions of Delbert O'Meara who served as the on-site local coordinator and Doss Brodnax of the Southern Rural Development Center who is providing support for the registration, program printing, and collection of materials to develop a proceedings. Finally, both Jim and I would

like to acknowledge contributions of Curtis Absher and Doug McAlister in planning the program. The strength of this conference has assured that both Dr. App and I have had a successful year in our role as chairmen of the respective Southern CRD and ANR Leaders.

Yesterday, Paul Warner discussed with many of us the future programming committee structure that the directors adopted for the South at a recent meeting in Hilton Head, South Carolina. The programming structure is to be initiated to support interdisciplinary and multidisciplinary programming and to focus on issues important to the South. We believe that the current conference effectively begins this process and all of us can be pleased that we have been farsighted enough to begin the process before the committee structure was conceived and confirmed.

Finally, we also are pleased that Marilynn Purdie from Mississippi representing home economics and Tom Rodgers from Georgia representing 4-H have chosen to attend. They will add greatly to this conference and we will be seeing much more of one another as we jointly plan the programs that are to guide Extension in the Southern Region for the foreseeable future.

PUBLIC POLICY AND PROFITABILITY FOR U.S. AGRICULTURE: THE NEED FOR POLICY EDUCATION TO IMPROVE FARM LEADERSHIP

Jerry R. Skees
University of Kentucky

My basic theme is that future profitability of U.S. agriculture will be heavily dependent upon U.S. macroeconomic and agricultural policies. There are three supporting themes that I will pursue to that end: 1) the nature of the farm problem has changed; 2) farm policy education is lacking in the U.S. and desperately needed in order to train a new generation of farm leaders who understand farm policy in the larger economy; and 3) farm structural changes toward a bi-modal distribution of large and small farms necessitates a rethinking of farm and rural policy. I would like to motivate your thinking with regard to these issues and what they mean for Extension programs of the future.

Understanding profitability requires an understanding of the interrelationships between asset values (primarily land) and the variety of public policies that can influence them. This is what has been lacking in much of our public policy education. Further, this lack of understanding helps explain why many of the myths associated with identification of the farm problem remain in place. The task of developing these linkages is challenging. The farm problem is much more one of asset risk and uncertainty than the level of farm income. When farmers understand more about the interrelationships between their asset values and macroeconomic policies, they will be in a better position to provide enlightened leadership for their sector.

Background

Agricultural policies have maintained remarkable rigidity for well over fifty years. In recent years, it has become clear that public support for U. S. agriculture is under increased scrutiny and that the basic assumptions underlying U.S. agricultural policy are being questioned. Consideration of new directions for agricultural policy necessarily must incorporate issues related to the dual structure of U.S. farming, the contribution of off-farm work to farm viability, the increased risk created by dependence on international markets, and tradeoffs between short run versus long run farm profitability and concerns of nonfarmers regarding the environment. The opportunity for reform in U.S. agricultural policy is significant. Informed farm leaders can play a major role in that reform.

Policy reform will require a recognition that the farm problem has changed. Legitimacy for public support of U.S. agriculture has been built around defining the farm problem as one of farm income. Price and income support policies are justified based on outdated assumptions that they will save the family farm. Events in the last decade point to a need for rethinking these underlying assumptions.

Farmers are no longer the disadvantaged group they once were. Their average wealth is three times that of the average citizen. When farms are divided into various sales classes, average farm income for the largest farms (i.e., those with over $40,000 in sales) is over two times that of the average citizen. However, this income is much more variable than the average citizen's income. Thus, those concerned about farmers should not be concerned about the level of income, but rather the variance of that income and the associated cash flow problems.

Even the difficult financial period of the 1980s was not as bad as many were led to

believe. In 1986 at the height of the financial crisis, the Economic Research Service of USDA estimated that 10 percent of the nation's 2.2 million farms were financially vulnerable. The number was down to 6 percent in 1988. A large percentage of U.S. farms simply had no debt during the 1980s.

None of this is to suggest that there were not problems. Those who responded to very strong expansion incentives in the 1970s were subjected to serious financial stress in the 1980s as many factors turned against U.S. agriculture. The basis of the problem was asset devaluation in a risky environment.

Agricultural policy of the 1990s must redefine the farm problem. Outdated concepts of farmers being a disadvantage economic class must be challenged by farm leaders. Part of this evolution will require both public policy educational efforts and leadership development for a new generation of farmers who are informed about how their sector is impacted by U.S. macroeconomic policies and international economics.

Understanding the Influence of Macroeconomic Policies

Among the most important educational efforts for policy educators is the task of helping farmers understand the type of risk they face. As agriculture has expanded its international markets and increased the use of debt, these risks have intensified. Farmers must be educated regarding the source of their major adjustment problems in the early and mid 1980s.

The 1970s are considered a prosperous period for U.S. agriculture. What was the source of that prosperity? Could it be expected to sustain itself? U.S. monetary policy was changed significantly in the early 1970s as the U.S. went from a gold standard to a flexible exchange rate in world markets. The result was a devaluation of the U.S. dollar. This, in part, was responsible for the export expansion of the early 1970s.

Through the 1970s, the inflation rate was relatively high. U.S. monetary and fiscal policies were focused more on economic growth than controlling inflation. After adjusting for inflation, interest rates were relatively low during this period. There are three components in the nominal interest rates: 1) the time value of money; 2) an inflation component; and 3) a risk component. The time value of money has generally been three to four percent. An inflation component is important because a lender does not want to loan money prior to inflation and be paid back in inflated and less valuable dollars.

With relatively high inflation and low interest rates, the real rate of interest was extremely low during the 1970s. As Table 1 shows, the inflation rate averaged 7.2 percent from 1972-80. In Kentucky the Federal Land Bank interest rate averaged 8.5 percent. Therefore, during this period, the real rate of interest averaged 1.3 percent. This provided a very strong incentive for farmers to borrow money.

In addition to the low cost of money, other factors were providing incentives for farm expansion. Domestic commodity prices were increasing due to expanded exports. Thus, monetary policy was influencing farm expansion in two ways: 1) via low real interest rates; and 2) via a decline in the value of the dollar that spurred agricultural exports.

U.S. fiscal policy also provided strong incentives for farm expansion during the 1970s via the income tax system. As farm incomes improved, farmers found they were paying more in taxes. In fact, the progressive tax structure during this period provided even more incentives for expansion. As inflation and higher commodity prices resulted in higher nominal incomes for farmers, they were faced with higher marginal tax brackets. During the 1970s, the maximum marginal tax bracket was 70 percent (since passage of the Economic Recovery Tax Act of 1981, this rate is between 30 and 35 percent).

If we consider a farmer who was in a marginal tax bracket of 50 percent, any expenses that were tax deductible would be valuable. Interest expenses are tax deductible. For example, a farmer who can borrow money at a nominal interest rate of 10 percent could write-off 50 percent on his taxes. Thus the nominal rate would be 5 percent, providing

more expansion signals to invest in land, livestock, or machinery. In addition, depreciation schedules and investment tax credits provided more incentives to invest in machinery during the 1970s.

Land prices are influenced by two major components: 1) the returns or rent earning capacity of the land; and 2) the discount rate; which is directly related to the interest rate. The expected earning capacity of land converts directly to the rental value. The value of land is determined as the sum of rents that a parcel of land can earn, summed over time and discounted back to the present. If a farmer owns a tract of land, that land is not only worth what it earned last year, but what it is expected to earn this year, and the next, and so on (that is, its earning capacity). Calculating the present value of a parcel of land involves estimating what the future rents of a parcel of land are worth today. In the 1970s, expectations were strong that future earning capacity of land would be high.

The summing of future expected rents and estimating what the total value of those rents are worth today (that is, the present value) is calculated by using a discount rate (also known as the discount factor, capitalization rate or the opportunity cost of capital). The discount rate reflects the fact that the money tied up in land ownership could be earning money elsewhere, such as in stocks or bonds. The rate of interest is commonly used as the discount rate to approximate the return available from alternative investments. The relationship between the value of land, future expected earnings and the discount rate can be approximated with the following rather simple model:

$$V = \frac{R}{i}$$

where V = the value of the land today
R = the constant rent expected in each future time period
i = the discount rate (or, the rate of interest).

This procedure is known as "discounting back to the present" or finding the "present value" of an asset. For example, if a parcel of land is expected to earn a constant rent of $100 each year and the annual rate of interest (that is, the discount rate) is 10 percent, then the present value of the parcel of land is $1,000 ($100/.10). Obviously, the greater (smaller) the rent earning ability of a parcel is (R), the greater (smaller) the present value of that parcel is (V). For example, if R increases to $150, then V would increase to $1,500. Alternately, if R decreases to $75, then V would fall to $750.

Changes in the discount rate also affects the present value of land. Assuming rents of $100, if i increases to 15 percent, then V would fall to $667. This is very logical since it suggests that alternative investments could earn a higher rate of return than committing the money to land. If the discount rate fell to 5 percent, then V would increase to $2,000.

Farmers need to understand these relationships. Clearly, all signals were go for increased land prices during the 1970s: 1) returns were high and expected to be strong in the 1980s; 2) inflation was relatively high; 3) the discount factor or interest rate was low. The average change in land prices in Kentucky during this period was 15.4 percent (see Table 1). After adjusting for inflation, the real change in land prices was 8.2 percent.

No one can argue that farm expansion was not logical during the 1970s. The trend line was set. However, one can argue that most, if not all, of the trend line was predicated on the premise that monetary policy would remain the same in the 1980s as it was in the 1970s. At the time, few in the agricultural sector were raising this concern. Bankers continued to lend money with expectations that land prices would remain a good hedge against inflation.

In the fall of 1979, monetary policy did change. The Federal Reserve, almost in isolation, decided that inflation was public enemy number one. The money supply was restricted. The brake was applied. It is difficult to identify any other single policy decision that caused more problems for the U.S. farming sector. A farming sector that was more indebted than at any other time in our history. Restricting the money supply resulted in higher cost of money--in other words--interest rates increased. Inflation was

reduced. Thus, the real rate of interest was hit from both sides. As Table 1 shows, the Federal Land Bank interest rate in Kentucky averaged 11.9 percent from 1981-86. During this period inflation averaged 4.7 percent making the real rate of interest 7.2 percent. Land prices declined in both nominal and real terms.

The devaluation in land prices can be directly attributed to the Federal reserve policy. In addition to the influence of interest rates, expectations about future returns from land also had a negative influence on land prices. First, the tight money supply and high rates of interest made the dollar more attractive to foreign investors. As the dollar rose relative to other currencies, the exchange rate changed so that our agricultural exports were more expensive. Second, the increased interest rates increased the cost of production since farmers were paying more for debt. This reduced the returns and expectations about future earning capacity of land. In the simple land valuation equation, both components were changing in ways that led to a devaluation in land values.

In short, the monetary policy brought about the massive devaluation in land in the 1980s. This devaluation was the major reason for the financial stress in the 1980s. Farmers who had debt loads that corresponded to higher land values suddenly found that their debt to asset position had exceeded what creditors would tolerate. This was possible even though their debt level may have remained the same. Farmers who had taken the strategy of servicing debt by refinancing land loans during the 1970s were particularly hard hit. These farmers and their bankers had been confident that inflation would continue and land prices would not decline.

The Cash Flow Problem

In fact, inflation is among the most serious sources of farm problems. The attempt to control inflation should be applauded by U.S. farmers. The cash flow problem is created by inflation and inflation expectations. Bruce Gardner develops the problem in his book **The Governing of Agriculture**.

When there is inflation, those investing in land assume that land prices will increase at a rate that is at least equal to inflation. As presented above, interest rates also reflect the rate of inflation. If we assume that the inflation free rate of interest (or the real rate of interest) is 3 percent and that is also the rate of return from farming, the cash flow problem can be developed.

A farmer having $100,000 in assets who desires to purchase 200 acres of land at $1500/acre would have to borrow $300,000. This resulting $400,000 in assets will generate a 3 percent rate of return each year of $12,000. If there is no inflation, the interest rate will be close to 3 percent. Under this situation, the debt service on the $300,000 would be $9,000. Thus, without inflation, the farmer has $3,000 as a rate of return on his $100,000 of equity.

With inflation of 6 percent, the interest rate is 9 percent (3 + 6). The rate of return from farming can still be 3 percent yielding the same $12,000 per year. However, the debt service is now $27,000. There is a shortage of cash equal to $27,000, $12,000 or $15,000. Still, the farmer may not have made a bad decision. The $400,000 of assets that he controls will inflate at 6 percent each year. This is $24,000. The $24,000 in capital gains offsets the -$15,000 in cash flow by $9,000. This is 9 percent of the original $100,000 in equity. Markets are working, but it is clear that only farmers who have other income to offset these negative cash flows could expand under these conditions. The wealth position was increasing, but the only way to take advantage of that wealth was to sell assets or to borrow against them.

Agricultural Policies and Land Prices

Understanding the land market is fundamental for farm leaders. Concepts of profitability in U.S. farming must be conditioned by an understanding of the land market. If we define profit as returns that exceed costs of production, then we must also discuss costs of production. This is where most discussions about profitability break

down because few can agree about how to value land prices. The cash flow problem discussed above makes this proposition even more difficult. All farmers did not pay the same price for their land. If inflation expectations are a component of the price of land, these expectations will not be realized until the land is sold. If they are included in the cost of production, the profit picture would be very bad just as presented above in the cash flow problem.

Given the cash flow problem, farmers and farm leaders are inclined to reach the conclusion that the profitability picture is bad. Without question, there are periods when they are correct if you are considering income flows from year to year. However, the problem can be inappropriately identified resulting in the wrong prescriptions. Without an understanding of how inflation and macroeconomic policies influence the farming sector, one could conclude that chronic low income is the problem. The policy prescription has been government involvement via income and price support mechanisms. Let's examine this in order to understand the implications. If the government involvement results in income levels that are higher than what would prevail without government, expectations about the future earning capacity of land will be higher. As we have established, these expectations will be bid into land prices.

Under the current system of transfer payments, benefits are bid into land prices. In fact, large government expenditures associated with the 1985 Farm Bill have clearly helped the land market recover. The problem is balance. A cycle can be developed that is very harmful to U.S. agriculture. When prices and income are supported at high levels, that profitability is bid into land prices. Over time, farmers may again argue that there is no profitability in farming because returns do not cover cost of production (including the cost of land prices that reflect benefits of the price and income support). If benefits go to landowners, then legitimate questions can be raised about the long-run impacts on U.S. agriculture. These programs will present barriers to entry for young farmers as they can not afford to own or rent land. Ultimately, the overvalued land will impact the competitiveness of U.S. agriculture in international markets.

Policy Options

While the continuation of current programs is most likely for the early 1990s, the critical issues confronting agricultural policy are not going to dissipate. I contend that new policies should build on an understanding of the dual farm structure. This should be accomplished in such a fashion that separates farm and rural policy.

Building new farm programs around the structural realities of U.S. agriculture is important. Recent trends highlight the importance of off-farm work for the small and relatively stable farms. Operators of mid-sized farms appear to be faced with the choice of increasing their farm size and becoming more commercial or with finding off-farm work and downsizing their operations. This is basically what is referred to as the bi-modal farm structure.

Those who would identify the farm problem as an income problem for the small farms would be well advised to examine the numbers. In 1988, farms with less than $40,000 in gross farm sales had farm income that averaged only $2,000 per farm. However, their off-farm income averaged over $26,000 (source: unpublished data from the Economic Research Service of USDA). These farms account for over 70 percent of the 2.2 million farms in the U.S.

Public policy education needs to work toward a rethinking of the interdependence of farm and rural communities. Emerging research is demonstrating that rural communities depend less and less on farms. According to USDA estimates, less than 7 percent of the U.S. rural population lives in counties that are dependent on agriculture. New thinking is emerging that suggests that farms depend more on rural communities than rural community dependence on farms. The important aspect of off-farm employment provides considerable support for this argument.

As farm leaders become more familiar with the true linkages between farms and rural communities, they may recognize the importance of diversification of job opportunities and rural development. Many farm leaders are becoming more aware of this and more concerned about rural development. Further, they are becoming aware that traditional farm programs do not contribute greatly to rural development. This message may not be popular in all circles; however, it is important that the Extension community become familiar with research that has demonstrated these relationships.

Policy for Commercial Farms

If one accepts that the farm problem is not the level of income, but rather the variability of income, then commercial farm policy should be reviewed. Recognition that government actions designed to support incomes are generally bid into land prices also requires one to recognize that changes in such government actions can adversely affect land prices. To the extent that a change in any of several government farm and financial policies can directly affect the balance sheet, this element of risk threatens farm viability.

The new international markets provide a significant element of risk and uncertainty. Farm leaders need to consider new institutions that will help farmers cope with risk in a fashion that does not lead to higher land prices or does not rely heavily on taxpayer dollars. Mechanisms whereby farmers share in the cost of managing risk may be needed.

Congress has demonstrated a desire to foster the types of institutions needed to meet the future requirements for risk management. The policy challenge is to provide institutions that simultaneously commit the farmer to more effective risk management strategies, while not causing the value of land to be bid upward. Commercial farmers need government and market signals that will help them reduce the risk associated with farming without creating hardships for international markets.

During the 1980s, Congress appears to have worked on two fronts to accomplish these policy goals. Legislators have made significant changes in Federal multiple peril crop insurance and have reopened options trading in the futures market. Both of these institutions require farmers to pay for risk protection. In principle, both crop insurance and options markets work the same way. In both, farmers must pay in order to protect against a loss of yield or prices and land prices will not be impacted.

In short, there are a number of alternatives that would help farmers cope with risk and uncertainty. Policy educators need to be familiar with these alternatives. They need to work toward new designs that address questions about how to protect farmers from risk associated with price movements, yield losses, and asset devaluation. These are the types of policies that commercial farmers need to understand in order to make informed decisions. They can only do this if they also understand the nature and source of farm problems.

Conclusion and Implications

The farm problem is no longer one of the level of income. Farm leaders must understand linkages of their asset values to the rest of the U.S. economy and the global economy. These linkages will help farmers understand the cash flow problems and the risk and uncertainty that they face. Understanding that macroeconomic and commodity programs contribute to that risk and uncertainty is important for farm leaders who are searching for appropriate institutions to address farm problems. Extension education about these interrelationships is critical. Without such education, we will continue to have farm leaders who subscribe to outdated myths about farm problems, and ultimately, the poorly formulated solutions will be developed that will have long run adverse impacts on farm profitability.

Table 1--Relationships between Inflation, Federal Land Bank Interest Rates, and Changing Land Prices in Kentucky

Year	Inflation	Interest Rates	Changes in Land Prices	Real Interest[1]	Real Changes in Land Prices[2]
1960	1.7%	6.0%	6.2%	4.3%	4.5%
1961	1.3	5.6	3.6	4.3	2.3
1962	1.1	5.6	5.6	4.5	4.5
1963	1.3	5.6	8.0	4.3	6.7
1964	1.5	5.6	5.6	4.1	4.1
1965	1.9	5.6	8.8	3.7	6.9
1966	2.7	5.8	3.2	3.1	.5
1967	3.2	6.0	7.8	2.8	4.6
1968	4.0	6.8	6.3	2.8	2.3
1969	4.8	7.8	2.7	3.0	-2.1
1970	5.5	8.7	5.3	3.2	-.2
1971	4.7	7.9	5.5	3.2	.8
1972	3.2	7.4	10.5	4.2	7.3
1973	5.8	7.5	12.3	1.7	6.5
1974	10.0	8.1	15.6	-1.9	5.6
1975	9.3	8.7	12.3	-.6	3.0
1976	5.2	8.7	18.2	3.5	13.0
1977	5.9	8.4	20.4	2.5	14.5
1978	7.4	8.4	15.5	1.0	8.1
1979	8.6	9.2	20.4	.6	11.8
1980	9.2	10.4	13.4	1.2	4.2
1981	9.4	11.3	5.8	1.9	-3.6
1982	6.0	12.3	2.4	6.3	-3.6
1983	4.2	11.6	-.9	7.4	-5.1
1984	3.6	11.8	-4.0	8.2	-7.6
1985	3.2	12.2	-10.0	9.0	-13.2
1986	1.8	12.0	-4.0	10.2	-5.8
	Average Values for various time periods				
1960-71	2.8	6.4	5.7	3.6	2.9
1972-80	7.2	8.5	15.4	1.4	8.2
1981-86	4.7	11.9	-1.8	7.2	6.5

[1]Real Interest Rates = Interest Rates - Inflation

[2]Real Changes in Land Prices = Change in Land Prices - Inflation

FOCUSING ON ECONOMIC SURVIVABILITY A RESPONSE

Ted L. Jones
University of Arkansas

Dr. Jerry Skees has made some key points about agriculture and rural America. First let me talk about agriculture. I believe the point was well made that agriculture is a major industry whose umbilical cord is connected to both the domestic and world economies. U.S. agriculture's contribution to these economies is apparent with the industry employing 21 million plus people, having over $709 billion in farm assets, and commanding over 16.6 percent of the total gross national product, with a farm producer population of less than 2 percent of the U.S. population.

Agriculture's principal economic problems in the past decade have not come from lagging or advancing technology and productivity, weather hazards or unfair trade policies of our competitors. Rather agriculture has been buffeted by unfavorable domestic monetary and fiscal policies and a rapidly changing and challenging global economic environment.

With this political and economic environment, it becomes apparent that agriculture will continue to organize its resources and develop market structure in such a way as to allow economic survivability of competitive farm firms. We must increase our economic understanding of individual representative viable farm firms and commodities. We must be students of our political and economic environment. Through our educational, informational and technology transfer programs we must be able to identify problems as well as assist our clientele in solving problems that are relevant to their economic survivability. We need to sharpen our abilities to be able to forecast when a particular issue will be on the public agenda, then decide how the Cooperative Extension system should respond.

The ongoing reorganization of resources at the farm level with the disappearance of medium size farms and the change in agriculture's market organization and structure has caused the words rural and agriculture to have different meanings.

Dr. Ron Knutson and Dr. Dennis Fisher, Texas Agricultural Extension Service, in their Executive Summary from their 1989 Rural Development Policy Workshops made the following points.

"Rural America was defined as all areas having less than 50,000 inhabitants located outside metropolitan statistical areas.

So defined, rural America contains about 25 percent of the U.S. population and 90 percent of its natural resources.

While Rural America may have once been dependent on agriculture, only 23 percent of the 3,106 counties in this country can now be described as agriculture-dependent, but more than three-fourths of the nation's counties are nonmetropolitan in character."

I would agree with Jerry that rural development policy should be segregated from farm policy.

As one focuses on economic survivability of farm businesses, the economic, environmental and social challenges faced by farm firms appear to be in conflict.

First, as we have heard, agriculture needs to be highly efficient and internationally competitive in order to be economically viable in the long run.

Second, American agriculture must have a sustainable resource base and the products must be safe to consume, with production systems that are environmentally acceptable to society.

Third, agriculture and rural America have social dimensions. This consists of the structure of farm firms. The linkage of the firms to the rural community and the linkage

of the rural communities to both domestic and global economies. In addition, CES needs to relate to both farm and rural families, the well being of the family as it supports its young people, and the needs of our aging population.

This environment of needs and uncertainty has created the demand for the development of economical, environmental and socially sound ideas and approaches to farming, rural life, and rural economic development.

Agricultural and environmental communities have different perceptions about what constitutes environmental soundness. While farmers can be environmentalists, and most are, and vice versa, the two groups tend to define environmental issues in different ways. The farm manager views the problem of pollution and how to control it from the perspective of the farm's productivity and profitability; the environmentalists view the problems and their control from the perspective of environmental quality--for example--clean water, clean air, safe food, etc.

Likewise, the agricultural and environmental communities have two fundamentally different perceptions of the federal role in dealing with problems. Farmers come from a tradition that emphasizes voluntary compliance, rights of private property, and use of financial incentives from the government. Environmentalists come from a tradition that emphasizes regulation.

As this struggle between two competing interests proceeds, it is important to keep in mind that agriculture is losing its "special status" as the public realizes that the small-scale family farm no longer dominates the farm production sector. Agriculture is increasingly viewed as another large business that should not be exempted from environmental quality requirements placed on other businesses. In addition, agriculture is increasingly viewed as an important source of environmental problems, and should be held accountable for improving the situation--particularly with federal funds going to agricultural producers.

Dr. Charles E. Hess, Assistant Secretary of Agriculture for Science and Education, makes a point in the National Research Council's Report on alternative agriculture. "Faced by the confluence of mounting economic and environmental pressures in agriculture, Congress wrote into the 1985 Food Security Act the charter for what is now called the Low-Input Sustainable Agriculture (LISA) Research and Education Program. The purpose of the LISA program is to strengthen and speed up the development and the dissemination to farmers of reliable, practical information on environmentally and economically sustainable farming practices. It recognizes that there is no magic formula and that the "best" set of practices will vary from farm to farm." The direction does not involve trying to tell farmers how to farm, but gives them information they need to choose their production practices wisely.

Safety of our food supply is an issue of growing importance to consumers. While consumer confidence in food safety is normally quite high, events such as the "Alar" scare quickly erode that confidence. We now have more precise methods for detecting dangerous substances in our food and for assessing their risks to human health.

Potential effects of food contamination range from diarrhea to cancer and arise from a number of sources. Pathogenic (human disease-causing) microbes and chemical contaminants may enter the food chain naturally from the environment, through farm practices, such as using pesticides or animal drugs, or through food processing and handling. Still others improve food quality in terms of taste, texture, visual appeal or shelf life.

Researchers from the Center for Disease Control and the Food and Drug Administration (FDA) estimate that from 6.5 million to 33 million Americans become ill each year from microorganisms in their food. This is roughly 3 to 14 percent of the population. An estimated 9,000 of these cases result in death each year. In contrast, the Environmental Protection Agency's (EPA) worst-case estimate is that pesticides in food cause potentially about 6,000 cases of cancer each year, or 2 in every 100,000 people. Most

toxicologists and food scientists believe that microbial pathogens are a more serious hazard than chemical residues in the food supply. We have major educational challenges in the area of food safety. Our success or failure without question can affect the economic returns associated with producing a given commodity.

As I listened to Dr. Skees discuss agricultural economic survivability and future competitiveness and the importance of economic, environmental and social linkages with both the domestic and global economies, I am reminded of a story.

This story is about a nation founded upon the principles of reason and moral responsibility. Blessed with an industrious people and abounding in natural resources, it became one of the most prosperous and self-sufficient nations on earth.

Eventually, however, having grown accustomed to ease and plenty, too many of its people grew self-indulgent. Foreigners were quick to exploit this weakness by selling them illicit drugs.

Drug smugglers established their headquarters in a southern city. In a matter of years, their poison had seeped into virtually every town through a weblike distribution system that flourished under the noses of judges, politicians and police--sometimes even with their assistance, for drugs can corrupt anyone.

And in time, this once great and noble nation was so withered that it fell victim to countries a fraction of its size.

This is a capsule account of what actually happened to China in the 19th century.

History records a sad cycle; the great civilizations--Greek, Spanish and Chinese--fell by their own inner weakness.

An estimated five million to six million Americans both rural and urban, regularly use cocaine, 500,000 use heroin, and 18 million smoke marijuana. According to a 1986 report by the National Institute on Drug Abuse, more than 20 million Americans experimented with cocaine in 1985, and 250,000 18- to 25-year-olds used the drug weekly.

No one here would disagree that the war on drugs is a major issue. Drugs are a part of rural America. I would contend that we need to extend our education and information commitment beyond our Youth at Risk Program. But this is a challenge to the CES system. Can we find the necessary resources? Is it within our mission? Should we establish linkages with other organizations in this area?

To Conclude

Since agriculture has evolved into an integrated component of our domestic and world economies, we can no longer afford territorial program areas. We cannot afford to have program areas competing against each other and more importantly we must not view others who provide services as a threat. We are the key source for objective research based information in agriculture, home economics, and natural resources. Entrance by private industry, other county, state or federal agencies to provide educational information and transfer technology programs should be viewed as opportunities to expand our clientele.

An economically survivable or viable agriculture will have three basic dimensions. The first is the economic dimension which includes technology, productivity, profitability, and sustainability. The second is the environmental and natural resource dimension. The third is the social dimension which includes agriculture's structure, rural families, and the economic development of rural America.

Assuming certain environmental and social constraints, we have to return to the very basics which is to know the economics of the farm firm under several different production systems. Could you appear before a Senate Agricultural Committee and discuss the economic realities of your state's agriculture or the economic realities of your state's rural sector? Do you have individuals on your staff who can?

What are the relationships among the farm firms, rural families, and rural economic development?

Can you discuss the economic health of each of the counties in your state?

What is the present, intermediate, and

long term economic outlook for varying regions in your state? Should we encourage the creation of more "Delta Commissions?"

What are your state economic and political trends and what will be their projected impact on agriculture and your rural areas?

Do we understand what the regional, domestic and global economic and political impacts have on agriculture and your rural areas?

Given certain economic stability assumptions, we expect public policy to support an economic system that will provide a viable agriculture which produces safe, abundant and nutritious food at reasonable prices while preserving the environment and the wholesome qualities of our rural heritage.

Dr. Daryll Ray and Dr. James Plaxico made the following statement in a publication titled **The Economic Structure of Agriculture: Rhetoric Versus Reality**: "The mammoth productivity growth in agriculture and its preeminent position as the technological marvel of the world are primarily explained by two factors working in concert: Continual technological advance and an economic environment that facilitates its adoption. This has been a one-two combination that has kept us a world-class grain producer. But if we ignore the risk-moderation component, U.S agriculture's future competitiveness should not necessarily be cavalierly extrapolated into the future."

While we have been discussing economic survivability of farm production units and rural America, it doesn't take too much imagination to shift to the economic survivability of the CES system. Are the issues related? I will leave the answer up to you.

Acknowledgement: Dr. Robert E. Coats, Jr., Extension Economist Management and Policy (Section Leader), University of Arkansas, Cooperative Extension Service made significant contributions to the preparation of this paper.

RURAL DEVELOPMENT: STATING THE CONCERN

Paul D. Warner
University of Kentucky

With one of the national Extension initiatives being rural revitalization, it is very appropriate that this session focus on rural development issues.

We have all heard statements of the magnitude of the problems of rural areas in comparison with urban areas. Let me review a few. Rural areas have:

- -Higher rates of unemployment and underemployment
- -Low per capita incomes
- -High rates of poverty
- -A slow rate of economic recovery
- -Higher rates of school drop out
- -Higher rates of illiteracy
- -Lower academic achievement scores
- -Poor medical care
- -A higher dependency ration (greater proportion of elderly and children)

Rural areas are faced with governmental policies that have been constructed in a piecemeal fashion. There is no comprehensive rural development policy. Rather, we have policies that are inconsistent or in direct contradiction and often were developed with urban audiences in mind. They frequently do not fit the needs of rural residents.

The costs of service delivery in rural areas can be expected to be higher per resident. Rural areas lack the efficiency of size and close proximity that is found in service delivery in cities. The provision of such services as water and transportation is more costly per resident. Therefore if one compares the per user cost of rural and urban service delivery, rural communities often do not qualify or are rated as a lower priority. However, the needs of these rural residents is just as great; in fact, it is often greater.

The human resource base in rural areas often lacks technical skills, has a lower basic education level, has higher rates of functional illiteracy, and the leadership capacity is less well developed. As a result, rural communities often are not receiving their fair share of state and federal resources due to lack of professional expertise in grantsmanship and planning.

Even though there is a close interdependence between agriculture and rural development, it is not sufficient for agricultural organizations and leaders to be the exclusive voice for the needs of rural America. Agricultural leaders provide an important expression about some rural needs, but they generally do not think broadly enough. On some issues, there can even be a conflict of position. For example, the interests of agricultural producers may be at odds with environmentalists in rural areas on the topic of pesticide use.

Today we have the privilege of having two experts on rural development. Lori Garkovich can tell us what social and economic changes are going on in our communities and help us to understand that we can influence the path that development takes. Dave Freshwater brings to us a national perspective through his participation in the formulation of rural development legislation. He can also give us some insight into possible funding sources for rural development.

RURAL FAMILIES AND COMMUNITIES: ALTERNATIVE PATHS TO THE FUTURE

Lorraine Garkovich
University of Kentucky

Introduction

Urban America and Washington periodically "rediscover" rural America and its problems. Typically, federal and state programs are developed (e.g., the War on Poverty, Head Start), with monies allocated to address the identified problems, and national life goes on, confident that the problems have been resolved. Clearly this approach has not worked. Few inroads have been made in halting the eroding tax base of rural communities, their deteriorating infrastructure, the rising incidence of poverty, the growing number of underemployed and unemployed rural workers or the continuing income gap between rural and urban families. The question before us is this: Are we going to continue doing more of the same or are we willing to look for alternative paths to the future?

I want to suggest to you that the policies and programs that have shaped our actions toward rural America have been ineffective because they have been built on inadequate assumptions. Without a substantive change in public policies, without recognition that the benign neglect of decades has intensified these conditions, without a more critical examination of the underlying dynamics of rural communities, and without rethinking how it is that land-grant colleges go about doing their job, rural Americans will be condemned to life as second class citizens.

A theme woven through my comments today is this: Extension has a key leadership role to play in **rethinking** strategies for improving the quality of life for rural Americans and then fostering the leaders with the skills to guide rural communities toward a better future. Why is Extension critical in this process? (1) Extension specialists/agents have (or should have) the skills and training that may be absent from rural communities. In this sense, Extension is a human resource for rural communities to draw upon when building for tomorrow. (2) Extension specialists/agents have access to a tremendous information base encompassing technological sociodemographic, economic and scientific knowledge. Moreover, Extension specialists/agents have access to other specialists who can assist in translating or interpreting this knowledge for local use. In this sense, Extension is an information resource for rural communities. (3) Extension specialists/agents have (or should have) ties or linkages with the various interest groups in a rural community. In this sense, Extension can bridge narrow, special interests/concerns by providing a more encompassing view of community dynamics and problems. (4) Extension specialists/agents can be a voice for rural America at the state and national levels. Because Extension has representation in even the smallest most geographically isolated communities, it is capable of articulating the needs of the most politically weak in our society. In this sense, Extension can help formulate an agenda for action for rural America.

Propositions for Communities of Tomorrow

The following propositions for communities of tomorrow are based on these assumptions. First, stabilizing the agricultural sector is a *NECESSARY* but *NOT* a sufficient basis for economic growth in agriculturally-dependent communities. Second, rural economic development is more than simply adding new jobs to local communities. Third, without substantial improvements in the rural human

resource base, economic development efforts are bound to fail in terms of making substantial improvements in the rural standard of living.

1. Only a small proportion of rural communities rest on an agricultural economy. In the South, only 14 percent of all nonmetro counties rest on an agricultural base. In this sense, programs designed to address the problems and needs of agricultural producers do not address the needs of most rural communities and peoples. Expansion of agricultural programs or increases in the funding of these programs are *NOT* rural development.

For too long we have treated rural communities as if they were all alike. But they are not. The diversified nature of rural economies demands a diverse set of development strategies. When we emphasize, through programming or funding, only agricultural producers we turn a blind eye to the needs of all rural peoples. Moreover, this is a short-sighted strategy. Why? Because six out of ten farm families rely upon some off-farm income to support the household. Farm families' opportunities to find jobs, and well-paying jobs, depend upon the health of local economies. The more diversified the economic base, the greater the variety of jobs, the greater the demand for labor, and the greater likelihood that farm family members will find employment opportunities. It is imperative that all the interest groups in rural America recognize that they share common problems and will receive common benefits from the strengthening of the rural economy as a whole.

Thus we must acknowledge that rural communities are not all alike. Their problems differ; solutions that work in one type of rural community will have variable effects in others; and the entrepreneurial pools differ in terms of size and quality. Extension must be sure that its programming embraces the needs and concerns of all rural communities.

2. Agricultural interest groups and all rural economic interest groups must begin to see agriculture as an integral part of rural economic life. Agriculture is *NOT* a separate sphere of economic activity.

Farm operators are producers *AND* consumers. When agriculture is healthy, agriculturally-related businesses prosper. But so do many others in the rural community. Research in Iowa and other states during the most recent farm crisis demonstrates that retail and general service businesses suffered losses, local tax receipts declined, and local banks experienced drops in deposits and increases in loan defaults during the worst years of the farm crisis. Despite this interconnectedness, rarely is agriculture seen as a resource base from which general economic development can occur. Farm operators rarely are members of the local chamber of commerce even though farming is as integral a part of the local business community as car dealers, grocery store owners or realtors.

The ignoring of the potential contribution of agriculture to community economic development is short-sighted because it eliminates a significant resource base from economic development planning. Let me illustrate with an example of a community with the kind of global thinking I am suggesting. Farmers in a community in rural Missouri were interested in expanding their production of potatoes. An entrepreneur was interested in producing and marketing a new kind of potato chip. Several large institutions in the area (a prison, a state hospital, and a small college) served meals to a substantial population each day. A cooperative venture was established among these various actors. The entrepreneur would buy all the potatoes from local farmers that met his production specifications. The institutions would purchase those not suited for potato chip production to feed their populations. Farmers found a diversified market for their commodity; a new manufacturing plant added jobs to the local community, and the institutions were able to acquire their food products at a lower cost than previously. Everyone gained because people were willing to define what local farmers produced as an input to general economic development. Agriculturally-based value-added manufacturing and other businesses can be a part of community economic development efforts but *ONLY* if farm interests work to make it so.

Extension can play a key role in bringing together representatives of different economic sectors in a community. Issues in rural communities tend to be addressed by specialized leaders. While this specialization of leadership may be effective in dealing with particular facets of community life, it does create problems. One of these is that it isn't anybody's business to think about the big questions facing the community or to think about how issues or problems may be related. Extension can provide the leadership that brings people together to think about the community's needs from a long-term perspective and from the viewpoint of the whole community. Extension specialists/agents should have the skills to bridge the specialized interests that too often have trapped rural communities in the path of yesterday. Moreover, they should have the skills to encourage special interests to develop innovative approaches to old problems. In the Missouri case, it was Extension that played the role of marriage-broker for the various actors.

3. Rural economic development strategies must be multifaceted. Economic development must go beyond the "buffalo-hunt" syndrome, there are few buffalos left. Rural economic development will succeed when rural peoples are encouraged and supported in their efforts to identify and exploit a diversity of unique economic niches. No one economic strategy will save any single rural community. The community that puts its economic eggs in one handbasket will go you know where. With diversity there is strength.

Research shows that the greatest number of new jobs added to the rural economy over the last decade were added by small businesses (i.e., those employing less than 20 persons) engaged in a wide variety of economic activities. These firms were more likely to hire the formerly unemployed and to provide jobs to new workers than expansions by existing firms. Yet, programs in support of economic development have tended to encourage smokestack chasing by providing incentive packages (i.e., low interest loans, capital improvements, tax credits) to large employers. While there have been other types of economic development programs, many have problems ranging from limited funding (e.g., small business loans) to eligibility requirements that exclude many rural communities (e.g., enterprise zones).

Rural economic development will succeed when we encourage local residents to exploit their local resources, skills and talents to build a variety of business ventures. Entrepreneurial excavating diversifies the economic base, enables new actors to enter the marketplace, and makes rural communities less susceptible to fluctuations in particular market segments. In this context, we need to begin thinking about economic development in terms of a series of a small steps that together strengthen the local economy.

What these three propositions suggest for community leaders is that the various interest groups are all in the same situation. What benefits agriculture will have positive spillover effects for other economic sectors. What benefits nonagricultural economic sectors will eventually have positive effects for agriculture. In agriculturally-dependent communities, the fate of all facets of the economy is inextricably linked.

4. Rural economic development is *MORE* than adding new jobs to the local economy. Attention must be given to the types of jobs and who gets employed when considering the actual results of economic development. Industrial development efforts must be matched to the human resource base of particular areas to make both types of programs effective.

Underlying most economic development efforts is the assumption that adding new jobs will automatically produce community-wide economic benefits. New jobs, it is assumed, will reduce unemployment, circulate new dollars through the community and strengthen the tax base. Yet research suggests that new jobs do not always go to the currently unemployed in a community or if they do take jobs, they are often at the lower end of the pay scale. Furthermore, many new jobs in rural communities are minimum wage, offer few if any benefits, or are part-time. Local communities often find themselves facing unexpected costs with the arrival of a new employer, such as the need to expand or

improve sewage treatment. Finally, some types of economic growth, such as the arrival of a discount retailer, may actually have a negative net effect on employment and retail sales within the entire business community. A recent study of the effect of the opening of a Wal-Mart in Iowa communities suggests that business is drawn away from established downtown retailers.

We need to direct attention to matching workers to jobs. Official rural unemployment rates are 26 percent higher than in urban places, but when underemployment is considered, rural rates are more than 30 percent higher. Underemployed persons include those "discouraged workers" who have given up looking for a job, those who are underemployed by hours (working part time when want full time job) or by low income (those working at minimum wage levels). Indeed, Clogg (1979: Measuring Underemployment: Demographic Indicators in the U.S., Academic Press) estimates that half of all employed rural workers are actually underemployed. When targeting job growth as a form of economic development, it is essential to consider who will benefit and to what extent. It is not true that any job is better than no job at all. Employment with minimal returns may actually increase the proportion of working poor as people become reluctant to move in search of the possibility of better jobs. In this sense, employment growth that increases the level of marginal employment in a community may actually be deleterious to family economic welfare because families become locked into financially unstable situations. One person describes this dilemma: "The underemployed person, having found a job, commonly stops looking for ways to improve the financial situation. A frequent result is that the new job also goes under, and the underemployed persons has not benefitted from the experience."

Thus, it is both the lack of jobs and the mismatch between jobs and workers that have contributed to a substantial proportion of rural family financial instability and hampered rural community economic progress. In this context, rural communities often need a "voice of caution," a voice that asks the questions critical to determining whether a particular economic development strategy is worth pursuing. Such questions would include: Who benefits? How? What are the costs? Who pays them? Extension specialists/agents have access to an information base that can help answer these questions. They should have the skills to interpret the experiences of other communities that have followed similar strategies. If Extension does not perform this role, who will?

5. Improving the educational training of rural peoples is a *NECESSARY* but not a *SUFFICIENT* precondition to economic growth. An educated and skilled workforce will be critical to the economic vitality of rural communities. Similarly, economic growth is a *NECESSARY* but not a *SUFFICIENT* precondition for encouraging rural people to invest in upgrading their skills. Linking education to employment reduces education to a job training program and discounts its more diverse and more substantive benefits.

Darryl Hobbs (Office of Social and Economic Analysis, University of Missouri) has assembled a worrisome set of figures. Ten (KY, WV, TN, NC, SC, GA, MS, AL, LA, AR) of the 12 states (plus In and Ok) with the lowest standardized test scores in 1988 were in the South. Ten (KY, TN, NC, SC, GA, FL, MS, AL, LA, TX) of the 15 (plus MI, NY, CA, NV, AK) with the highest drop out rates in 1987 were in the South. Hobbs has found a clear association between states with high drop out rates, high proportions of minority populations and high rates of job growth. Growth in services jobs and the upward pressures on the minimum wage are attracting students from schools if their only reason for staying in school is to be able to get a job. A reinforcing feedback between the educational attainment of rural residents and the structure of the rural economy occurs because the rural economic environment demonstrates that a willingness to work does not guarantee a job, that a job does not guarantee an adequate living, and that persons with limited education are as likely to find employment in the rural economy as those with higher educational attainment.

Yet, the human resource base of the rural

South does not offer a sound foundation for economic growth. Nearly 39 percent of nonmetro Southern adults did not complete high school, and 16 percent have not completed 8 years of education. It is estimated that one fourth of rural Southerners are functionally illiterate, a rate 71 percent higher than in the South's metro areas. When these conditions are linked to the fact that by 1990, three fourths of all new jobs added to the economy will require, at a minimum, a high school degree, and that by the year 2000 the median years of completed education required for a job is estimated to be 13.5 years, then, the rural South will simply not be able to compete for the jobs of the future. Moreover, if our schools focus only on teaching children how to pass competency tests or the types of job skills necessary for today's jobs, then our children will not have the ability to take on the jobs of tomorrow.

This situation bodes ill for an agricultural industry that demands an increasingly greater level of technological knowledge to function efficiently. Today's farmers need access to semi-skilled and skilled labor capable of operating expensive, technical equipment (more and more of it computerized) as well as capable of safely and effectively utilizing a wide variety of chemical and other technological inputs. But the pool of available hired labor in terms of numbers, quality and cost of this labor is becoming more problematic. The pool of hired labor is diminishing as the traditional sources of farm labor (i.e., children of farm laborers, tenants and young persons seeking to enter farming) decline and the competition for labor from manufacturing and service employers who offer better working conditions, benefits and pay attract potential workers. This is especially true for those persons with an educational background or work skills that would enable them to compete in an industrial labor market no longer seek farm work due to the comparative advantages of industry. As one of the farm operators we interviewed last summer noted, you shouldn't put somebody that can't read or write on a $100,000 combine. It doesn't make good business sense, yet many farmers have no alternatives.

Education and economic leaders in rural communities, then, have common interests. Indeed, it could be argued that in order for each to succeed in their respective jobs the other must succeed in theirs. Yet, in only a few communities have partnerships been developed between business and education, and agricultural leaders have been virtually absent from these partnerships. Some companies grant employees temporary leaves of absence to teach junior and high school classes about modern business, while others offer students work-study opportunities. In other places, businesses "adopt" a local school, and employees donate time as tutors or funds for special projects or the purchase of new equipment. In Versailles, Kentucky, Texas Instruments has initiated a program offering basic literacy, high school equivalency and other classes in the plant. The firm is also working with the local school board to remodel a vacant school building as an "adult education center." In Falmouth, Kentucky, the Fuller automobile engineering plant has donated classroom space, books and the salary for a literacy teacher for its employees. This firm and others believe they have received a major return on their investments in education in terms of workers who are more motivated, ambitious, and productive. A challenge for Extension is to encourage similar involvement in educational affairs by agricultural leaders. Ultimately, agriculture suffers when the community's education system falters.

But education and economic interest groups must expand beyond these efforts to develop skills and move into cooperative ventures that help students acquire the ability to learn how to learn, that increase their motivation and enhance their sense of personal identity, and broaden their perception of economic participation. In this context, getting a job isn't the sum of their future, rather their future should be being able to take advantage of emerging economic opportunities. Experiential education activities that get students out of the classroom and into their living community are an important part of achieving these goals. But this means that business leaders in industrial sectors, including agriculture, must be willing to become

active participants in the educational process. One way of encouraging this is for the boards of all the community organizations to meet together once a year to see what they have in common.

Extension can be the bridge that brings together the various educational and economic interest groups in the community. Extension should have a foot in both camps because of its long-running commitment to both education and economic development. Moreover, the leadership development programs currently sponsored by Extension in various states can become a critical factor in fostering a better understanding of the interdependence of education and economic development, but only if programming is developed to focus on this issue.

Proposals for Rural Families of Tomorrow

The U.S. is one of the only industrialized nations to not have a national family policy; to not acknowledge that there exists a vested public interest in and responsibility for family welfare. A long cultural tradition of privatizing family issues has meant the abandonment of individual families to their own resources. That is, individual families are assumed to be responsible for their own economic condition and its consequences. Furthermore, rarely are national policies and programs evaluated for their effect on the structure and functioning of the family. It is as if we have assumed that families function in a social vacuum, isolated from the effects of the forces of social change. Existing programs and policies are seriously flawed in that they fail to directly address the needs of families or to take into account their effects on family well-being. Families have been abandoned to their own devices under the misguided belief that general economic growth produces specific benefits for individual families and that negative outcomes reflect individual family pathologies rather than the structural consequences of living in a rural environment. A new set of propositions for thinking about rural families is necessary if we are to move towards a better tomorrow.

1. Society has a vested interest in assuring socioeconomic equity among families regardless of residence. Failure to do so extracts a high penalty as the total society pays the costs of financial instability. Urban areas cannot continue to operate as islands of wealth, opportunities, economic growth and high standards of living in a rural sea of poverty, limited opportunities, stagnant growth and low standards of living.

By any measure, rural families are more likely to face financial instability than urban families. Rural family income is only 73 percent of urban family income. The rural poverty rate is 50 percent higher than that for urban areas and the over 300 persistent poverty counties identified by the USDA are all rural, demonstrating the consequences of years of benign neglect. Rural areas have a greater proportion of working poor, indeed for young rural families with one wage earner in 1986, the poverty rate was 31 percent compared to 20 percent for similar urban families. Hence, lower standards of living and dramatic fluctuations in economic resources characterize rural family life.

Financial instability limits opportunities for self-improvement and opportunities for parents to provide for their children's attainment. Financial instability increases family stress. Financial instability narrows families' focus from long-term goals to short-term survival. Finally, financial instability can lead to diminished aspirations, a sense of hopelessness and a loss of incentive. In these and many other ways, financial instability weakens the most important building block of a community--the family.

The interdependence of family and community economic welfare is clear--when communities prosper, more families have more opportunities to prosper. But this depends upon whether economic opportunities are structured so that all families have equal access to these opportunities. It is also true when families prosper their communities benefit. Family financial stability translates into more disposable income to circulate through the local economy, a broadened tax

base, less reliance upon government transfer payments, and greater demand for services and retail businesses.

Perhaps one of the most important reasons for concern over the increasing financial instability of rural families is its long-term effects on educational achievement. For example, Hobbs reports that the correlation by state between the amount spent per student and achievement test scores was .22, and there was no correlation between the proportion nonmetropolitan population and the achievment test scores. But, the correlation between the proportion of children below the poverty level and achievement test scores was .78! This illustrates the relationship between family financial instability and diminished aspirations and achievement.

Extension has an important role to play in addressing the needs of financially unstable rural families. In the short-run, extension can work to encourage economic development that addresses the employment concerns of those most in need in rural communities. In the long-run, extension can do much to inform communities that efforts at educational improvement are likely to founder on the shoals of rural poverty. The relationships between economic and educational poverty is so strong that it demands a simultaneous two-pronged effort if we are to succeed in alleviating either problems.

2. Rural families must have better access to a wider variety of social and human services. The geographic isolation of many rural communities translates into limited opportunities to use the social, health and counseling services typically available in urban places. As a result, rural families and ultimately rural communities suffer.

Rural families face the same problems as urban families--drugs, delinquency, marital stress, chronic physical and psychological conditions, the need to care for dependent family members. Yet, rural families must travel to distant urban centers for many services and this assumes that they have the economic resources to purchase these services. Most rural communities do not have the financial resources to sponsor needed services, nor do they necessarily have the population base to justify an organized-for-profit service business. This is where extension may play an important role.

In some states during the early 1980s, extension organized and operated emergency hot lines for distressed farm families as well as sponsoring a few counseling intervention programs. Agricultural extension today provides farm business management counseling; home economic extension provides family and household financial management counseling; and 4-H provides career counseling for young adults as well as counseling for youth-at-risk. There is a need to rethink these various efforts. For example, how can these various services be more effectively coordinated to insure that the majority of rural families are aware of these services and have access to them? How can these various services be extended to more clients and to address more issues through the training and mentoring of volunteer counselors? Given the costs and difficulties of providing "professional" for-profit services in rural communities, neighbors helping neighbors may be the most cost effective and logical strategy for meeting this need. Extension has the information and human resource base to support such an effort and also has the contacts within the community to identify both potential volunteers and potential clients. How can extension use this effort to build more ties with a community? To reach a clientele that, perhaps, has had no prior contacts because they say no benefits? To build bridges among different types of persons in a community?

My final comment focuses on the concept of *INTERDEPENDENCE* that has been woven through this discussion. We've noted that healthy rural families help produce healthy rural communities and vice versa. We've noted that agriculture can contribute to a strong rural economy and a strong rural economy will strengthen agriculture. We also noted that a strong and successful educational system is the foundation of economic development and a strong economy provides an impetus to educational improvement.

3. Artificial differences within extension (i.e., between 4-H, agriculture, home economics, community development) and

between extension and research must be eliminated. Although we often speak of cooperation, we often act competitively, each seeking to carve out a niche of justification and a share of funding.

If we are going to work to encourage cooperation within communities, we ought to lead by example. The different areas of extension specialization are simply different parts of the same body. Similarly, good extension programming is grounded in good research, and good research is grounded in the real world understandings of extension. Greater efforts at cooperative and supportive programming must be made to make real the promise of Cooperative Extension.

We also must recognize that we are dependent upon each other, and we must be sensitive to the needs of each other. Today, Bud and Elwood spoke about the role of extension in the aftermath of Hurricane Hugo and the need to deal with its psychological consequences. We must not forget that extension specialist/agents are human too. This means that they have personal needs and fears, personal interests and concerns too. These individuals may need as much help in difficult times as do our traditional clientele. When we interviewed farm families in Kentucky last summer during the drought, we worked quite a bit with the county agents. Everyday these agents had to work with farm families who were losing their crops for the third or fourth time in a five year period, who were in serious financial trouble and experiencing deep psychological stress. No one human being can struggle with these sorts of problems day-to-day, and not be affected. We must not forget that supportive services should be available to extension personnel too.

Conclusions

Today, rural communities and families face many of the same problems they have faced for decades--a weak and fluctuating economic base, a lack of or inadequate public and social services, a widening gap in the standard of living vis-a-vis urban residents--and a growing list of new problems--drug abuse, a deteriorating infrastructure, the declining economic importance of its resource base. The old approaches to problem-solving have not succeeded and the challenge is to identify new ones or to adapt old strategies for changing conditions. Extension can be a spearhead in these efforts but only if extension leaders are willing to rethink the meaning of rural community development and are willing to redesign their programs and relationships with clientele groups.

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RURAL DEVELOPMENT STRATEGIES AND OPPORTUNITIES

David Freshwater
The Joint Economic Committee of Congress

In the last year interest in rural development has experienced a major resurgence. Articles in major national magazines and newspapers, a resurgence of legislation and hearings by the Congress, discussion of the issue by the Administration, and a reawakening of traditional rural interest groups have all drawn attention to the decline of rural America. However, to date it is hard to point to any concrete evidence that the renewed attention has resulted in a marked improvement in the rural condition or in any concrete policy response.

Development as Innovation

Before addressing possible rural development strategies and opportunities we must first define what we mean by rural development. Certainly rural development is part of the broader notion of economic development but applied to rural areas. As such, it is generally distinguished from urban development and economic development in third world countries. Although there are major overlaps in the nature of the problems and the available strategies to address them, the three aspects are generally defined as distinct issues. One consequence of this segmentation is that rural development is typically considered in isolation from events in urban areas, and in a domestic rather than global context, despite growing evidence of the importance of national and international events on rural areas.

For most people, economic development is defined in terms of economic growth, but David Osborne in his book **Laboratories of Democracy** adopts Jane Jacobs' notion that economic development is better defined as innovation. The notion of innovation focusses on the adaptation process and catches the importance of change but without the necessity of growth. One of the advantages of viewing development as innovation is that it leads to thinking about economic development in ecological terms.

The principles of ecology suggest that different species adopt particular survival strategies depending on their environment, their attributes and the competition they face. In an ecological context, growth is only one way to survive. In fact, growth may ultimately be a strategy leading to failure if the enlarged population cannot be sustained. Ecology makes use of the concepts of stability, specialization, succession and growth to determine the place of organisms in an environment--that is, to define their ecological niche. In this context survival of a community depends upon being able to fulfill a useful role that in some sense is unique. One of the basic principles of ecology is that no two species occupy the same niche. If you think about it, this is not that different from the standard advice given by economists to differentiate your product.

Another advantage of the ecological perspective is in dealing with places where growth is unlikely. There are many rural communities that we know will not grow, even through we may be unwilling to admit the fact. Further, there are a number of communities that do not want to grow but are seeking stability. While rural development has typically been characterized in terms of growth it need not be, and in many cases it cannot be. The focus on growth has generally left us unable to deal with the problems of very small places or those seeking to maintain their status. There may be ways to adapt to change that do not require growth, but if your objective is to foster growth you are unlikely to find them.

When defined in terms of growth, the logical implication of the development process is the conversion of rural areas to cities, since by definition sustained growth results in urbanization. This reflects the underlying bias in most discussions of development, which are almost

always couched in an urban context. By development we generally mean increased specialization, improved access to a wide array of higher level goods and services, and all the other factors that characterize cities. Given this particular definition, the emphasis on growth clearly follows. Carried to this logical extreme rural development is an oxymoron, somewhat akin to military intelligence.

Another important aspect of the standard concept of economic development is that rural areas are seen as being dependent on urban places for their survival. This is the best known of Jane Jacobs' theses on the importance of cities. She argues that all meaningful progress comes in urban areas since that is where the greatest concentration of skills and resources are. Progress in rural areas results from a trickling down of the benefits from urban development.

In a sense it is difficult to argue with the Jacobs' hypothesis. Cities are where the bulk of the population and markets are, and particularly for rural areas in relatively close proximity to urban areas, their relative condition depends upon the health of the closest urban places. However, there is a useful distinction to be drawn between the immediate service functions of rural areas in the hinterland of a city and their broader role in a national and global economy.

If you believe in export-base theory, then regions grow by virtue of exporting goods and services outside the regional economy to generate income.* In this context rural regions can have two distinct functions: one is to supply goods and services to the closest central place, the other is to export beyond the region to other areas, or true export or basic industries. Only the first makes them dependent in the Jacob's sense on the health of the local urban areas.

In addition to ecological concepts, rural development also carries with it the standard economic concepts of efficiency and equity. Efficiency questions surround the under-utilization of scarce resources in rural areas, and have become particularly important given current concerns about competitiveness and the recognition of an imminent labor shortage. Equity concerns lead to questions about the availability of goods, basic social services and the general quality of rural life.

Rural development then can be thought of as the process of identifying and fulfilling the role of a particular community in its region, the nation and the world. For most communities the regional and national aspects of the problem more than exhaust available capabilities. While growth may be required in some cases, other communities may need downsizing depending on the conditions. In both cases innovation and hence economic development takes place. Tom Stinson makes this point well in his paper "Helping People In Place" published in the Joint Economic Committee proceedings, **Towards Rural Development Policy for the 1990s.**

Almost every rural success story points to the wisdom of this advice. Successful communities are those that have looked about them, examined their resources, the potential competition and the likely demands, and then tried to fill an unmet need that was within their capability. This is not a one-time process. Surely Jacobs' defines economic development as innovation because the environment continually changes, pointing out the need for a continual process of assessment and evaluation.

The Main Elements

It is useful to think of five basic building blocks for economic development. They are:

-business assistance, which involves helping existing businesses either grow or maintain their markets, as well as attracting new business;

-physical capital, comprising the basic infrastructure of roads, bridges, sewer and water systems and communications facilities;

-social capital, which improves the quality of the population through education, job training and health care;

-planning capital, which improves the quality of the population through education, job training and health care;

-planning and management, which provides the leadership to carry out the assessments required prior to innovation; and

-finance, which allows public and private resources necessary to bring about change to be assembled and employed in a timely manner.

These five pieces are all required for economic development. In the past we have tended to focus on the first two, in part because they are the most visible and provide the most immediate return on investment. However, the failure of many industrial recruitment efforts, and the chronic excess capacity of industrial parts, shows that a broader approach is required. One of the more encouraging aspects of the current round of discussion on rural development is the growing emphasis on social capital, planning and finance as important factors in rural development.

Rural Strategies

How can rural communities develop? In the early 1980s the farm crisis was symptomatic of the severe dislocation in virtually the entire spectrum of rural activities and has drawn into question the economic function of rural areas. A combination of changing demand, adverse domestic and international macroeconomic conditions, and increased foreign competition devastated both the primary industries and manufacturing sector in rural America. While more recent trends have resulted in a recovery for agriculture, mining, forestry, energy and manufacturing, there are few expectations that the euphoric conditions of the 1970s will be repeated.

As a result, many rural communities are seeking new opportunities. A number of new options have been proposed. The strength of the producer service sector in urban areas has led to interest in developing an expanded service sector in rural areas. Similarly high rates of growth in electronics, communications and advanced manufacturing have led to these industries being targeted. The basic questions that still need to be addressed before rural communities embark on major investments to attract these industries are: to what extent does rural America have an advantage in these areas, where will the competition come from, and how much additional demand will there be?

Before investing in major new activities such as telecommunications projects and advanced manufacturing facilities, rural areas must realistically assess their comparative advantages. Rural areas have traditionally stressed their low wage, low skill, disciplined docile labor force. None of these characteristics are particularly relevant to the potential growth industries. Rural managers are also typically lacking in the skills necessary for these types of business.

Similarly, these industries tend to need a critical mass to provide synergy and allow support services to develop. This is difficult to achieve in rural areas. Equally important, one of the characteristics of successful firms in these areas is a very fast rate of growth. Even though a rural area may be able to support the initial activity of a company, it is likely to lose the company if it succeeds and outgrows the capacity of the community to support it.

Opportunities in rural areas are therefore likely to remain resource based. Land, materials and space are the basic advantages of rural areas. Increasingly stringent environmental regulations in urban areas are likely to foster the transfer of a number of industries to rural areas. This does not mean rural areas should become pollution havens, but they should recognize their relative surplus supply of assimilative capacity. In areas in relative proximity to urban centers, place is likely to attract wholesaling, distribution and storage activities. While competition from third world countries in more routine manufacturing is likely to intensify any increase in transportation costs should give rural America an increased opportunity in activities that produce bulky or heavy products, or which use raw materials produced in the United States. In a sense this involves building on existing skills since they are the only ones that are currently available.

Rural Strategies

The suggestion that planning precede any rural development efforts without accompanying advice that at least identifies broad development strategies gives little of value to a community. Similarly, economic development is too often defined in isolation from political and social structures. Failure to address real constraints that originate in these areas often dooms economists' plans. Although an economist has no great advantage in telling people how to deal with these

issues, he or she should be able to recognize their importance.

One of the great difficulties in rural development is that there are no good answers to the questions in consideration of these issues raised. I too have no solution to the problem. Instead of answers a partial list of critical questions that must be addressed in developing rural strategies at a local, state and federal level is all I can provide:

-To what extent is the support of the existing social structure or power elite necessary for rural development to take place? The individuals in the power elite often have a vested interest in preserving the status quo. This is most striking in the unfortunately still common phenomenon of the company town. How do you convince them to support change? If you can't convince them, should you go around them, and if so how?

-How do you convince the poor that change is in their interest? In the short term, change may mean the loss of jobs and even with retraining, a period of unemployment. Similarly, how do you convince the unemployed to take a job if it means only a small increase in cash income and the loss of medical benefits from medicaid?

-In a federal system with at least three levels of political authority how do you determine the role of the various levels of government? To what extent do the great variations in capacity, capability and interest at the state and local level affect the distribution of responsibility?

-With a political system that is based upon annual appropriations and is biased to short-term results, how do you keep programs in place for a long enough period of time to do some good? How do you deal with the inherent political pressure to spread scarce resources thinly, rather than concentrate them in a small number of areas where they can make a greater difference?

-How do you reform or abolish existing programs that are not effective given the presence and interests of an established bureaucracy, and the desire of recipients of the benefits or established programs to keep what they now enjoy?

-How far can rural communities go in influencing their political environment? What arguments are there for preserving a distinct rural way of life? What do rural areas provide that society values enough to support their continued existence? What form should that existence take? Are rural areas just small versions of urban areas waiting for growth, or are they inherently different?

-Given the declining number of rural residents, their eroding political power and the broad overlap of rural and urban development problems, does it make any sense from a political, social or economic perspective to talk about rural development as a separate issue? Do rural people have any particular claim on the government that suggests there is a reason to address their needs first?

-How much of the argument for rural development should be made on economic grounds? To what extent are we willing to agree to provide access to some minimal set of basic social services as part of a broad social contract? How do we define what constitutes this minimal set, and what are the consequences for society of denying this responsibility?

*This of course begs the question of what constitutes a region and how you explain global trade which takes place in a closed system.

SOME THOUGHTS ON EXTENSION'S ROLE IN RURAL DEVELOPMENT STRATEGIES AND ALTERNATIVES

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Farm Foundation

I won't comment on specifics of either the Freshwater or Garkovich presentations. I agree generally with their views though not with all their specific points. What I prepared without benefit of seeing their papers ties in quite well and draws some implications for Extension's efforts in rural economic development.

The Challenge

Rural development clearly is an opportunity and challenge at state and local levels. There is much discussion at the national level, but little action. There is legislation under consideration, but it has been many years since the need for attention to rural development problems was initially recognized. Generally, USDA's policy favors rural development.

The Extension initiatives include ones designed to foster both national and state rural development programs.

A number of state and local organizations support rural development programs with varying emphases or approaches. For example a National Governor's Association committee examined the background of rural development policy, explored alternatives and made recommendations to the nation's governors. The Council of State Governments Center for Agricultural and Rural Development recently held its third national conference in La Crosse, Wisconsin, during the last week of September, 1989. Various other organizations, including the National Association of Counties, National Association of Regional Councils, and the National Association of Towns and Townships, also are active in the area.

Local citizens and officials are demanding programs to assist rural areas develop economic opportunity. A number of states have legislated or set up administrative units to focus attention on, and initiate activities designed to further, rural development or economic activity. They employ a variety of approaches such as establishing incubators, creating tax incentives, providing economic analysis and information, encouraging "value-added" activities, promoting exports, recommending alternative crops, etc.

Programming Needs

Garkovich argues that Extension's roles include providing a human capital resource base upon which rural communities can draw; serving as an information source; acting as an institution without vested interests; providing a knowledge base on national activities; and analyzing implications for local and state problems and issues.

Freshwater's characterization of successful rural communities challenges Extension to help communities improve their economic potential. "Successful communities are those that have looked about them, examined their resources, the potential competition and the likely demands, and then tried to fill an unmet need that was within their capability" (p.3). He argues that this implies "...the need for a continual process of assessment and evaluation."

Ronald Knutson and Dennis Fisher (p.1), in testimony before Congressman Glenn English's House Agriculture Subcommittee on Conservation, Credit and Rural Development, "...outlined three fundamental components of

comprehensive rural development policy:

-Building human capacity
-Providing appropriate infrastructure
-Developing rural business

"Extension can play a crucial role in helping to achieve policy objectives in each of these areas. The greatest need is for expanded Extension programs in four primary areas:

-Public policy education
-Management training
-Improving decision making capacity of rural leaders
-Technical assistance."

Implications for Extension

Extension must play an important role in rural economic development. But to do so, Extension may need to reestablish credibility as a source of insights, information and assistance in a policy education approach to rural economic development.

It is necessary to form coalitions with various interest groups, agencies, and organizations to deliver effective rural economic development education programs. Extension can provide the knowledge base for, and educational input to, their activities, as well as help them interact effectively to focus their various talents on the challenges and opportunities facing rural communities. This suggests encouraging staff involvement in intrastate coalitions and regional interaction to draw upon others for input.

Drawing on the knowledge base from wherever it exists in the university is an important element of any rural development Extension activity. Perhaps drawing from other institutions in the region is a viable strategy. Certainly expanding the economic development research knowledge base is an important component of any rural development activities undertaken by Extension or the land-grand university.

A effective Extension effort in rural economic development contains a number of elements:

-A flexible approach to the issues, needs, other sources, etc.
-Responsiveness to specific educational needs
-Resourcefulness in coalition building with external groups involved in rural development
-innovative use of the knowledge base that involves a role for subject matter departments
-A creative interdisciplinary approach to specific needs
-Cooperation in drawing on regional programs and materials

One approach is interdisciplinary task forces using educational materials created by regional subject matter committees individually or through joint subcommittees. For example, the Southern Extension Farm Management, Marketing, and Public Affairs Committees have organized several workshops and conferences over the past several years that fit into the rural economic community development area.

Public Policy Education Process

It is important to help local, state and multi-state leaders identify needs, issues and policy options for dealing with rural development. You will very likely get involved in controversy. There is no prescription for rural economic development. There are different views and thus differences in opinion about what strategies should be followed. There is a need to identify a range of options to deal with perceived problems or issues.

Using the public policy education approach to maintain credibility is an important strategy. This involves identifying the issue, exploring options to deal with that issue, analyzing consequences of the various options, and then letting the groups or citizens decide what strategies or actions they wish to take. True, those groups may need to facilitate a decision process or mechanism and may need Extension's help in doing that.

It is critical to analyze the consequences or expected results of following each option or course of action identified to deal with a given issue or problem. To do this, Extension must pull on the resources of the university-wide research base; use other sound outside sources; pay attention to the various implications for different groups affected; and con-

sider interests of farmers versus the rural community broadly defined. Jerry Skees makes the point about interrelationships and the direction of influence between farmers and rural community prosperity.

It is important to let the people involved draw their conclusions about their best choices, but Extension has an important role. Extension can help develop leadership capacity to deal with problems and issues, can help facilitate and catalyze coalitions to deal with the problems and issues; and can play an educational role, either in the broader context or in providing technology transfer assistance.

For example, Texas A&M, under a Kellogg project grant, is working in two four-county regions in the northern panhandle in coalition with the Texas Bankers Association and other local groups. The Southern Farm Management, Marketing and Public Affairs Committees are preparing materials for use in rural development policy options education. Minnesota, South Dakota, North Dakota and Montana, in another Kellogg project involving restructuring the upper Midwest, are focusing on education and health systems policy.

Extension policy specialists and the Southern Extension Public Affairs Committee can help all Extension personnel understand how to use the public policy education approach to education in economic development work.

Summary

There are many opportunities for Extension to play an important role in rural economic development. Particular attention to various rural development policy options and education, grounded on a sound research base, to help citizens sort out the most useful options from their perspective can be a significant Extension contribution to rural development in the 1990s.

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WASTE MANAGEMENT: STATING THE CONCERN

J. Douglas McAlister
Virginia Tech

The principal foundation of all Cooperative Extension Service (CES) activity is the application of appropriate knowledge to human affairs to bring about intelligent action and change. The objectives of our CES educational programs in waste management are to improve and expand the capacities of citizens and public officials who deal with the waste management problems facing their community.

It is estimated that Americans throw away approximately three and a half pounds of garbage every day. This adds up to 160 million tons of municipal solid waste annually, and this amount is expected to rise at least 20 percent by the year 2000. About 80 percent of this trash is buried in landfills. Garbage disposal costs are now calculated at four to five billion dollars annually. The Environmental Protection Agency predicts that one-third of the landfills in the U.S. will run out of space in the next five to ten years. Added to this issue are proposed regulations by the EPA to monitor hazardous wastes, gasses, ban discharge of harmful wastes into underground water, and strengthen controls on rodents, insects, fire, and odor. Also, EPA's goal is to divert 25 percent of the nation's municipal solid waste from landfills and incinerators by 1992. These regulations will most likely add $800 to $900 million to disposal costs, the burden of which will fall on states and localities. At the same time, environmentalists consider the new standards as too lenient and are demanding stricter regulations to ensure protection of human health and the environment. Clearly, municipalities are facing public policy issues that impact virtually every U.S. citizen.

The provision for the removal of community solid waste has been a responsibility of local government since Roman times. In contemporary times, NOT IN MY BACKYARD has become the first reaction to the discussion about waste management locations. Community based discussions about waste management have most frequently been associated with the stigma of having a waste management facility in their neighborhood. The popular consensus seems to be, "They are fine, but not in my backyard." This attitude toward waste management sites may be based on the fact that the facilities can be hazardous and an eyesore if improperly managed. The general image of an "open dump" with frequent burning of refuse, blowing of paper, along with rodent problems, is an image of the 1950s and 60s but slowly being removed.

Waste management requires discussions on, and solutions for, four major emphasis areas: collection, transportation, processing, and disposal. Each issue requires careful study and detail analysis if a community is to appropriately deal with its waste management problems.

A number of waste minimization strategies are available and must be explained to consumers. Several of these strategies include:

-Source Reduction: the purchase of products and packaging which are less wasteful or less toxic.

-Reuse: the purchase of longer lasting, durable goods and reuse package materials.

-Composting: the stock piling of yard waste and its composing.

-Vermi-composting: the development and maintenance of a worm bin to dispose of family food waste.

-Recycling: the increased understanding

-Recycling: the increased understanding that paper, glass, aluminum, plastic, motor oil, vehicle tires and various metals can be reused in manufacturing.

As we enter the 1990s, waste management issues will continue to impact CES directly and indirectly. Two broad questions seem to provide guidance as we attempt to provide focus to the issues: (1) What are our areas of concern in providing quality educational programs in the area of waste management? and (2) What are our real expertise in the provision of solutions?

While the questions are simply stated their corresponding answers require careful consideration; for there is no acceptable alternative to finding the correct solutions to the waste management dilemma.

Extension has a long history of promoting research based information. Agricultural experimentation systems for research on water quality, sludge disposal, pesticide disposal, and composting is already in place. Experience in public policy economic development, land use planning, and environmental education coinciding with the research and experimentation systems makes the Cooperative Extension Service a viable link in the waste management field.

WASTE MANAGEMENT: PROBLEMS AND SOLUTIONS

Durwood S. Curling
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Our nation is indeed in the midst of a solid waste management crisis. How we as a people deal with this crisis over the next decade will have much to say about what our environment will be like in the 21st century. The day of digging a hole in the ground and putting our waste in it is gone--be it solid waste or hazardous waste. The crisis that we have to deal with is not "their crisis," it is ours--it's mine, it's yours. Each of us has contributed to it, and each of us has a responsibility to be a part of the solution.

Those of us in the solid waste industry recognize, on the one hand, that we have a professional obligation to be out front in proposing environmentally sound solutions for our solid waste disposal problems; on the other hand, we also must be advocates of lifestyle changes when it comes to how we purchase, use, and dispose of the vast array of commodities available to each of us in our personal and professional lives. Two examples of the kind of personal advocacy I speak of are the disappearance of the glass milk bottle and the appearance of the disposable diaper. I doubt if any of you here today purchase milk in a glass bottle or returnable container. Thirty to forty years ago this was the only way you could purchase milk for your family, and the containers in which you purchased it were reused time after time. One of the principal contributors to the solid waste stream in our communities is the single use container. We must move away from that concept and return to reusable or recyclable containers.

Recent national publicity indicates that there are over 18 billion disposable diapers used by families in our nation. If this number is correct, and based upon my having weighed an unused disposable diaper, these contribute approximately one percent or the total solid waste generated in our nation. No one can dispute the convenience of the disposable diaper, but also no one can dispute the contribution they have made to the solid waste disposal crisis in our nation.

In our professional lives there are many relatively simple things that we can do to reduce the quantity of waste generated and an outstanding example of this is a white paper recycling program that you could develop in your office. This material, the stationery, etc., that you throw away in your office is readily recyclable, and there are very favorable markets for it in our country. It can produce as much as $40 per ton for your office if you are a reliable producer.

In your office and homes you should begin your own personal recycling program. Set aside your glass containers, aluminum cans, and your steel cans and locate a buyer for them. It may be of some inconvenience to you but there are buyers available and, if you will deliver these products to them, you can dispose of them in a manner which will permit their reuse.

The proper management of the solid waste we generate is a matter of lifestyle choice, and each of us can be a part of our solid waste disposal solution by making proper choices.

I would like to tell you about the solid waste management system that we have put in place in southeastern Virginia. The area that our agency serves contains approximately one million people and two thousand square miles of land area. For a point of reference, both of these are larger than the State of Delaware. The agency was formed by eight communities on the south shore of Hampton Roads and these eight include two rural counties, Isle of Wight and Southampton, and six cities,

Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk and Virginia Beach. Within this area, we generate approximately one million tons of municipal solid waste annually--obviously, this works to be approximately one ton per person, per year.

In the mid-1970's, representatives of these eight communities, working through a very strong regional planning commission, decided to solve their coming solid waste disposal crisis on a regional basis. At that time, seven of the eight communities were facing an immediate crisis due to their landfills reaching capacity. Also, these communities were aware that their landfills were nothing more than open dumps and that with the coming of new stringent state and federal regulations for the operation of landfills, their existing facilities would have to be closed. As a result, various planning studies were developed through the regional planning commission. The alternative selected was to develop a three-part program consisting of recycling, a waste-to-energy facility, and two regional landfills.

The recycling program is extensive and growing almost monthly. At the present time, we operate seven used oil collection facilities, four glass drop-off facilities, used battery and white good collection at eight locations. In addition to these drop-off programs, the agency magnetically pulls ferrous metal from the solid waste being processed at its waste processing plant in Portsmouth, and this material is delivered to a ferrous metal recycling plant where it is cleaned, and nuggetized and then marketed to a local steel mill. Also at this plant, aluminum cans are hand-picked from the waste stream and are marketed to Reynolds Aluminum.

At our regional landfill in Suffolk, we operate a tire shredder where used tires are shredded. The sidewalls are marketed by the contractor who operates the plant for us to an energy customer in central Virginia. We still have to landfill that part of the rubber shred which contains the steel belts.

Within our waste-to-energy operation, incoming solid waste is processed, and as I mentioned, the aluminum and ferrous metal are removed from it. The undersized portion, or non-combustible portion such as grass clippings, leaves, etc. are removed and landfilled in a regional landfill located in the City of Virginia Beach. Of each ton of waste processed in our plant, approximately 78 percent is actually converted to fuel.

We operate a pilot curbside recycling program for approximately 7000 homes in seven of our eight communities. In this program we collect six products for recycling: clear glass, newspapers, aluminum cans, HDPE plastic and PET plastic. We collect these products once per week from the participating homes.

At the present time, we are in the process of developing a yard mulching and composting program at three locations. We have in hand approximately two million dollars to develop these three facilities. We estimate that yard waste represents approximately 12 percent of our waste streams, and if this can be removed, it will result in substantial savings in landfill space.

One of the principal components of our management system are the seven transfer stations which we operate throughout the region. A transfer station is nothing more than a facility where the truck that picks up your garbage and mine comes and off-loads into one of our tractor trailers. Then the tractor trailer transports the waste from the transfer station to either the waste-to-energy plant in Portsmouth or the regional landfill.

In conjunction with the transfer stations, we operate a fleet of approximately 100 tractor trailers for the hauling of raw waste, process rejects, ferrous metal and the ash from the U.S. Navy's Power Plant at the Norfolk Naval Shipyard.

As you can ascertain, the program that has been put in place is large and comprehensive. It has also been a very expensive project to construct. Thus far, we have spent approximately $170,000,000 in capital cost. One of the most interesting points about this capital cost is that none of the communities has contributed a single dime toward the construction of the system. The funds to construct the system were borrowed through project financing, and this debt is amortized from the disposal charges made against the users of the system. Our present

disposal charge, which we call a tipping fee, is $25.50 per ton.

In order to finance our program, it was necessary that we have in place a contract between us and each participating community which would guarantee that those persons that bought our bonds would be repaid from revenues received by the system. The principal ingredient of our contracts with the communities is that each community guarantees that it will deliver, or cause to be delivered to SPSA, at least 95 percent of the waste generated in their community, and that each will pay whatever is required without cap to dispose of that waste. We guarantee, on the other hand, to accept this waste and to dispose of it in an environmentally sound manner.

One of the ironies of our entire program, is that due to the substantial growth that we have had in our area, approximately 18 percent during the decade of the 1980's, we are still actively involved in developing new disposal capacity to serve the eight communities. We estimate that our landfill in Suffolk has enough capacity to last us until about 1998. Consequently, we are looking at all available alternatives to us to develop additional disposal capacity. Included is an additional waste-to-energy plant, an additional landfill or the expansion of the existing landfill, additional recycling, etc. We know that the eight years we have to develop this additional capacity is not a great deal of time.

The present program we have in place was conceived in the mid-1970s, and we did not receive our first ton of waste until January 1985. It took us approximately eight years to get the contracts in place, develop the facilities, borrow the money, etc.

If I were starting out today to develop a new solid waste disposal program, the first thing I would do would be to create a citizens committee to participate in the development process. I have learned the hard way that if one goes out as a professional and advocates a new solid waste disposal facility, he will be pounded upon by the "not in my backyard syndrome." It is absolutely imperative that you have local citizens who have been a part of the process and who feel ownership for the process to put forward statements of the need of the facility. The second thing I would do is put the team in place that will be assisting you in developing the program. Early on, you should have on hand: lawyers, particularly environmental lawyers; investment bankers; architects; engineers; and other persons with expertise as may be needed depending upon your local situation.

I would be prepared to face capital costs beyond my wildest imagination. For example, when we developed our first landfill, and we think it is a state-of-the-art landfill, our development was approximately $40,000 per acre. Under the new Virginia regulations governing the development of landfills, our consultant has estimated our cost at $170,000 per acre. If you are thinking about a waste-to-energy plant, a rule of thumb is that a 1,000 ton per day plant will cost you $100,000,000. Finally, be prepared to persevere--the development of solid waste disposal facilities is an absolutely necessary process for both rural and urban people. However, you will quickly find that while everyone wants it picked up, no one wants it put down.

POLICY DIRECTIONS IN WASTE MANAGEMENT

Cathy Harris
Virginia Department of Waste Management

I would like to briefly discuss the subject of "Policy Directions in Waste Management." In doing so, I will describe the Virginia Department of Waste Management, its creation and its regulatory responsibilities; I will discuss the current "Solid Waste Dilemma," including the national problem, and Virginia's challenge; I will detail the Virginia Waste Management's Board policies, and in particular, I will focus on the Commonwealth's commitment to recycling.

The Virginia Department of Waste Management was created on July 1, 1986, from several different agencies, boards, and commissions. The department administers different programs, among them are:

- hazardous waste management
- the siting of new hazardous waste management facilities
- Superfund
- SARA Title III, Emergency planning and Community "Right-to-know"
- solid waste management
- the transportation of hazardous materials
- the management of low-level and high-level nuclear wastes litter control, and
- recycling.

The department has a governing board appointed by the governor, and the agency's executive director has the authority of the board to act, when the board is not in session.

The department both promulgates and enforces regulations concerning the management of solid wastes, hazardous wastes and nuclear wastes, and we promulgate regulations for the management of hazardous materials in storage, or in transportation.

Now that you know a little more about the Virginia Department of Waste Management, let me tell you what our agency sees as the most important policy issues facing us as a Commonwealth.

It's garbage. So let's talk trash.

Last year, this country produced over 160 million tons of municipal solid waste. That averages three and one-half pounds of garbage, per person, per day, for all of us in the United States of America, every day. And these volumes are steadily increasing--at the very time when the U.S. Environmental Protection Agency estimates that within five years at least a third of the sanitary landfills currently accepting municipal waste will close, filled to capacity. Every day we generate more garbage, and every day we have one less place to put it. That is the Solid Waste Dilemma facing us as a nation.

So what is Virginia doing to meet this challenge?

With the exception of a few localities, Virginia is not squeezed tight for time, space and funding, as are many states in the northeast. And the Commonwealth is planning, now, for the future.

And what is the effect of this planning?

Specifically, the Virginia Waste Management Board has adopted policies and procedures to emphasize the importance of planning for how we will manage our solid wastes. The Board has promoted the concept of the "waste management hierarchy" which begins with planning and advocates:

source reduction
reuse
recycling
resource recovery
incineration
landfilling

At present, U.S. EPA estimates that the nation landfills 80 percent of its trash,

incinerates or sends to a waste-to-energy facility another 10 percent, and recycles 10 percent. But the Environmental Protection Agency envisions a dramatic change will take place before the turn of the century. Within 5-10 years, 50 percent of our garbage will be landfilled, 20 percent will be incinerated or burned for energy, and 30 percent will be recycled.

There is no doubt in our agency that solid waste management will be the focus of increasing attention by the Commonwealth, and, accordingly, the Department of Waste Management will need, and is receiving, more personnel and more funding to assist in this challenge. We have staff devoted exclusively to the permitting of solid waste management facilities and to the enforcement of the solid waste management regulations. And we have staff devoted exclusively to recycling.

But more is needed, and the Virginia General Assembly recognized the importance of that in legislation which was passed in 1989. Among the new laws enacted, were:

HB 1219 - Requires persons seeking to site a solid waste management facility to obtain siting approval from the county, city or town in which the facility will be located before filing an application with the Department of Waste Management.

HB 1601 - States that the transfer or sale of surplus state supplies or equipment shall in no way prohibit a state entity from recycling paper products, beverage containers or used motor oil.

HB 1742 - Requires local planning commissions, when developing comprehensive plans, to include the location of existing or proposed recycling centers.

HB 1743 - Allows the Virginia Waste Management Board to specify requirements for local and regional solid waste management plans to include waste reduction, recycling and reuse, storage, treatment, and disposal of all nonhazardous waste. The plans identify how minimum recycling rates will be achieved (10% by 1991; 15% 1993; 25% by 1995). After July 1, 1992, no permit for a solid waste management facility will be issued until the applicant has a comprehensive plan approved by the Board.

HB 1744 - Requires the Department of Mines, Minerals and Energy to place signs in establishments which sell motor oil stating that they either accept used oil for recycling or a sign that provides a tollfree number that citizens can call to find out where they may recycle their used oil.

HB 1745 - Requires the Department of Waste Management to develop and implement a plan for the management of all waste tires in the state. Imposes a $0.50 fee per new tire sold by retailers to be deposited into the Waste Tire Fund--a nonreverting fund. Moneys in the fund will be used to evaluate the tire problem, plan solutions and provide moneys to localities to deal with tires.

HB 1746 - Allows the Department os Waste Management to use litter control taxes and other moneys to fund the recycling program.

HB 1747 - Requires the Department of General Services to procure recycled paper (at least 50% recycled) for use by state agencies provided that the lowest responsible recycled paper bid is not more than 10% higher than the bid price of non-recycled paper.

HB 1750/SB 678 - Allow the Virginia Resources Authority to fund solid waste treatment, disposal and management facilities, recycling facilities and resource recovery facilities. Increase to $400 million the total amount of bonds issued at one time by the Authority.

HJR 301 - Requests the Department of Transportation to study the feasibility of using recycled glass as supplemental aggregate is asphalt.

HJR 383 - Requests that all state agencies actively participate in recycling efforts.

HJR 384 - Established a joint subcommittee to study the means and methods of disposing of scrap metal industry fluff and other recycling residues and to examine tax incentives to encourage recycling in the Commonwealth.

HJR 395 - Requests the Department of Waste Management to study the use of composted yard waste in the Commonwealth.

HJR 434 - Encourages the plastics industry to utilize cornstarch in its manufacturing process so that products are biodegradable.

Moreover, new stringent solid waste management regulations were formally adopted by the Department in December 1989. Comprehensive, new infectious waste management regulations were drafted and over this year, 1989, are being finalized. Just this past month, the Department held public informational meetings around Virginia to receive comment of the "Regulations for the Development of Waste Management Plans," the local and regional plans for achieving planning control of solid waste and of reaching the recycling goals of:

10% by 1991
15% by 1993
25% by 1995

In short, we feel that perhaps the most important policy direction for the Virginia Department of Waste Management, and for the Commonwealth, will be to address the solid waste dilemma, and it is clear that recycling will play a significant part in solving it.

WATER QUALITY AND AGRICULTURE: WHY ARE WE CONCERNED?[1]

Ray Campbell
Oklahoma State University

Agriculturalists learn at an early age that the survival not only of agriculture but of society in general depends on perpetuating the health of our natural resources. We, therefore, foster a deep and lasting respect of our environment. In that spirit, this session is another step in our continuing evaluation of the potential impacts of producing absolute necessities, food and fiber, on one of our most precious natural resources, water.

Most might respond to the question, "why are we concerned about water quality," with "because we in agriculture are being challenged as never before and, in our opinion, unfairly so." However, this response is preceded by one that we feel should go without saying. The future of agriculture above all other industries is dependent upon the perpetuation of an abundant supply of clean water. Not only are we concerned as members of society but with the understanding that agriculture has, by far, the most to lose should the quality of our water supplies deteriorate. However, there is a series of realities surrounding the water quality issue that must be faced if the agricultural industry is to continue making progress.

We in agriculture service (and rightly so) are a water-conscious society. Moreover, agriculture is progressively being categorized with heavy (e.g. manufacturing) industries when "pollution" comes to the public mind. This trend began in the late 1960s and early 1970s with the concern over pesticide use and has continued with most recent focus on nitrates and groundwater. The mass media routinely reports new examples of contaminated water supplies. In essentially every case, agriculture is summarily implicated first as the presumed cause. Recently, a television news feature reported that an Iowa town was forced to abandon its water supply because of excessive nitrate content. The same has happened in Oklahoma. In these and similar cases, agriculture was cited as the cause.

There is legitimate reason to be concerned over the levels of contaminants in groundwater. For example, increasing nitrate fertilizer use in some states (Keeney 1982). The public is rarely told that essentially all water contains an inherent natural (background) level of nitrates. And unfortunately, that level has not been established for most water sources. Further, the proportion of the nitrates above the natural level that should be ascribed to areas and other sources such as septic tanks has not been established. Programs must be directed toward partitioning the amounts of contaminants that can be attributable to these various sources. Only after that information is collected can we ascertain the sources of potential contamination and logically impose controls to reduce the entry of chemicals into groundwater.

Suggested alternatives to present farming methods such as low-input agriculture and organic farming are inherently appealing to decision makers. However, considerable research is needed regarding concepts such as low-input agriculture and their potential applications at the farm firm level. Without careful evaluation and education, proponents of these ideas suggest that instantaneous conversations in farming practices (e.g. use of manure instead of chemical fertilizer) will alleviate environmental problems. That, of course, is not necessarily the case. For example, whether nitrogen is applied to soils via "synthetic" (petroleum-derived) fertilizers, "natural" fertilizers (manure) or is fixed by naturally-occurring organisms, the ultimate forms operative in the soil, and the end

results as far as plant growth are the same. The questions surrounding these suggested approaches should be couched primarily in economic terms; the proposition that farming efficiency can be improved by more effectively optimizing purchased inputs with outputs is an intriguing one and deserves more focused attention.

We must realize the interdependency of agriculture with societal needs. Society depends on agriculture as a source of food, and agriculture, in turn, depends on a source of high quality water. The problem being discussed during this meeting is not agriculture's alone. When considering a shift in our agricultural practices, we must all realize that the stakes are high. We must make the correct decisions and in a decisive, timely manner.

Cooperative Extension must play a vital role now and in the future in providing educational programs to agriculture producers and to the public in general that assist them in making wise and sound decisions concerning water quality.

[1]Adapted from remarks by C. J. Scifres, Department of Agronomy, Oklahoma State University, presented at Water Quality and Agriculture's Role For the Future Symposium, Tulsa, Oklahoma, November, 1989.

FAMILY AND COMMUNITY CONCERNS IN WATER QUALITY WITH A FOCUS ON AGRICULTURAL CHEMICALS

Alvin R. Morris
Water Management Division, EPA

When I was a youngster and until my mid-teens, I spent as much time as I could during the summers on my uncle's farm.

I saw first hand the close bonds between farm families and the environment.

While I did not realize it until later, preventing erosion, protecting their water supplies and trying to insure the health of their families and livestock was a deeply ingrained way of life.

As I became aware of the 4-H activities, I realized that program was a way to instill in the young people the long tradition of good stewardship of the natural resources under the farmers' care.

The world has changed greatly since those years, and the lives of farmers and the quality of the environment have changed with it.

The U.S. economy and population have increased substantially since the 1950s, bringing with them many new pollutants which often overburden the environment's ability to assimilate them.

As cities and towns grew, townspeople and rural families found their lives more intertwined than they had been.

Farming has changed too.

Farmers have improved their productivity enormously.

Although there are far fewer farmers today than 90 years ago, they are harvesting much better and larger crops.

The agricultural bounty we are used to has come about with the great assistance of agricultural chemicals--insecticides, herbicides and fertilizers.

To produce still larger harvests, chemical intensive farming has been introduced onto heretofore marginally valuable land.

The result of this evolution in farming is that more chemicals are being used on more land to produce more food than ever before in our nation's history.

This astounding productivity of the American farm has contributed greatly to a U.S. standard of living that is among the highest in the world.

We spend a smaller share of our income on food than almost anyone else.

The U.S. consumer has an unmatched quality, quantity, and availability of food.

Yet, as we have seen in other parts of the American economy, sometimes the economic practices that contribute so much to our national quality of life have unforeseen and unintended environmental side effects.

The same American farming methods that have supplied this abundance to people the world over, are also contributing to some serious environmental problems that have the potential of imposing substantial health and economic costs on all of us including farmers.

We have increasing evidence of agricultural chemicals leaking into groundwater aquifers and into surface waters.

Topsoil, fertilizers, animal wastes, insecticides, and herbicides are being washed off farm and ranch land into rivers, lakes, and bays.

The cultivation of marginal farmland is reducing wildlife habitats and the underground storage tanks found on many farms have the potential to foul groundwater aquifers, including those that supply drinking water directly to farm families.

In addition, the health of farm workers and farm families is being threatened by exposure to agricultural chemicals, and chemical residues are showing up in our national food supply.

Recognizing these concerns and the linkage between agricultural production and protection of the environment, Congress has passed several pieces of legislation that attempt to balance the public's interest in both areas.

In large measure, EPA has been given the responsibility for implementing that legislation.

We will be cooperating with state and local governments in research efforts to define the environmental effects of many different agricultural chemicals.

Specifically, we will be extending our efforts to identify the sources and extent of groundwater pollution.

But strong government regulatory programs by themselves will not solve the environmental problems that are linked to agricultural practices.

Because those problems are so diverse and because agricultural practices vary so widely from farm to farm, we need the understanding and voluntary participation of farmers across the country if we hope to achieve our national environmental goals.

There is strong evidence that farmers are willing to be vigorous allies in the battle to prevent agricultural pollution.

An important reason for this is a substantial interest in protecting the quality of both ground water and surface streams because these are often the water supplies for homes and livestock.

There is another reason we want to enlist farmers in this battle--that is because they are closer to the problems and are more likely to know how to solve them most effectively.

For example, we feel if farmers are convinced that run-off needs to be controlled or that pesticides can be just as effective and also less environmentally harmful when used in a different manner, we will not need government regulations to require these changes.

So we are trying to open avenues of communication and provide alternative effective methods which will help everyone understand what is needed for the long-term stewardship of agriculture and the environment.

Let me offer a brief example of some specific problems, and some of the opportunities to prevent further problems, even if we can't totally remedy the existing ones.

Measured by volume, sediment is the most prevalent pollutant from agricultural runoff. But it is agricultural chemicals that represent a major water quality threat.[1] It is estimated that 50 percent of applied nitrogen is not taken up by crops.[2] The lack of controls on pesticide applications in order to protect ground water has also been well documented.[3]

For example, in 1986 EPA estimated that at least 17 pesticides have been found in the wells of 23 states.

Our dependence on ground water for all uses is significant. It currently provides 40 percent of the irrigation water used in the United States and drinking water for about 50 percent of the U.S. population.

In rural areas it accounts for as much as 95 percent of the water used for domestic purposes.

It would seem unnecessary to say but--it must become a primary thought to all of us that it is absolutely essential to identify and prevent sources of ground water contamination because of our reliance on it and because remedial efforts to clean it up are enormously expensive--when it is even possible!

Let me offer some possible ways to reduce agricultural chemical impact where it is not wanted:

Fertilizer nitrogen is both the largest and most controllable nitrogen put into the farm system (although livestock are a significant source of nitrate). It seems reasonable that farmers could save money and help the environment by using farming practices which result in using less nitrogen.

For example, soil testing to match the amount and timing of chemical additions to the soil and crop has been successful in Pennsylvania. Substituting organic nitrogen from cover crops and manure to reduce the chemical addition could also be helpful.

One last example: waterways can be protected by using forested riparian "buffer zones" to trap sediment and assimilate

nitrogen and phosphorus from run-off.

Pesticides, the other major source of concern in our discussion today, can also be reduced by farming practices which are practical and effective. For example:

1. using alternative crop production patterns and techniques--crop rotation can eliminate or limit infestation by certain pests, or improve soil conditions, resulting in heartier crops and more pest predators;

2. modifying agricultural practices, application equipment and use patterns--by applying chemicals only at rates and times indicated by field testing and monitoring to determine pest levels or by using cultivation practices that limit week growth; i.e. using the methods which are known as Integrated Pest Management[4] and

3. In some cases biological controls are a completely satisfactory pest control mechanism.

Now that I have focused on some of the reasons why I feel that a major problem facing our communities, both urban and rural, is unwanted and often dangerous chemicals in our environment and water supplies, let me illustrate for you some new approaches being taken to marry management decisions and program priorities to the high tech world of computers and satellites.

This tool is called a Geographic Information System--a GIS for short.

While I'm sure many of you are aware of this tool, we at EPA have just begun to explore and use the power of this technology.

With so many pieces making up the environmental puzzle, it becomes virtually impossible to wrap one's mind around the implications and relative importance of the whole picture which these pieces create.

We have rivers, streams and other waterways with varying wasteloads; there are changing land use patterns, innumerable land-fills, discharge pipes, hazardous waste sites, drinking water intakes and wellheads.

There are ground water recharge areas, wellhead protection zones, sensitive wetland areas, and special high value wildlife zones.

There are farming areas, urban areas, forests, and mountains.

Well, while that doesn't exhaust the many topics that are of concern to setting priorities and making programmatic decisions, it gives you a flavor of the problem of integrating these into a meaningful recipe for protecting the public and the environment.

A GIS takes all the above types of information and provides a bridge to the disciplines of cartography, computer science and environmental management.

In so doing, a GIS gives us a computer-based "tool-box" to identify and forecast environmental threats to humans and ecologic areas.

Before I show you some examples of how this technology aids in making decisions, let me complete these considerations with some concluding thoughts.

I have presented to you today some collected ideas on what I see as several of the most pressing water related environmental problems. They are problems now and with the expected growth in population, the concern about these problems will only be enhanced.

Change will require change in agricultural technology, the associated practices and social attitudes, and technology is the easiest of these.

"In order for new less damaging techniques to have an effect they must be used.

For them to be introduced at the level of the individual farm, they must benefit the farmer.

In a market system, such benefit generally takes the form of profits.

Yet markets are not well equipped to protect resources such as water, in which it is difficult to establish property rights." [5]

In my view the problem of greatest challenge for agricultural policy will be to devise institutional mechanisms that will allow farmers to benefit from valuing these precious resources at their true social worth.

And I have no illusion that we shall solve that problem very soon, but I also believe we have the ability and the will to find the answers.

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WATER QUALITY: A RESPONSE

Wayne Jordan
University of Georgia

What is the relationship between the Cooperative Extension Service and these so-called environmental organizations? What is it now? What should it be? Are they like the plague so we don't have anything to do with them? Do we ignore them because our farmers won't understand? What is our role in helping the farming community and the agricultural leadership understand that they need to sit down and talk with some of these folks? They won't agree with everything that is said. But at least a little bit of dialogue can open up and we, I believe, can demonstrate that we are willing to put these same groups on the program and try to help facilitate communication. I think that is very important, and we shouldn't overlook it.

What we do with water as an Extension system is still in the beginning stages even though we have had conferences and meetings for some years. We have begun to identify it as a critical issue. We have it on the agenda as a national initiative, a presidential initiative no less. It is still just one of the numerous issues that is whirling around this general area of health and environmental concerns that is going to move us more and more out of our comfort zone as a system. Water availability in drought years and water rights are important, but the ground water and the ground water quality, the potential or the reception for pesticides and fertilizers to pollute our ground water and surface water are emotional health-oriented concerns just like food quality and food safety. Combine these with the perception by the general public that farmers and the agrichemical industry are either using pesticides or developing pesticides that threaten the safety of our ground water and our food supply and the Cooperative Extension System finds itself with a tremendous opportunity to reconfirm our mission and re-establish our leadership as "the" educational agency that can bridge these multiple sections in society and bring practical application of research technology to bear on these problems that are of broad societal importance. To do so is going to require alterations in our attitudes, our attitudes with administrators, our state staff specialists and our county staff.

Work on a task force or committee to address water programming should not be viewed by ourselves or our people as over and above our normal job responsibilities. I have heard this, "This is over and above what I was hired to do, but I'm willing to do it if you will give me release time to do it." Ever heard that? It's got to become, and we have to communicate this, an integral part of everyone of our employees' responsibilities. Who doesn't have a responsibility for water and water quality? Not many of us. It has to be an integral part of what we do.

We all would like, and could use, more money, but as I read the 1985 Postscript to the water quality meeting in Atlanta, my brother Tal Duvall said that if we sit around waiting for new money before we start working on water, it's going to be too late. No new dollars to do it. Maybe we will get a few dollars in this special initiative, but ultimately we get them one place, and they are taken away somewhere else. So new dollars may be difficult to demonstrate. Nonetheless we've got the responsibility, and legislatures like the word reapplication. Just reassign and reallocate. If there is something new they need to be doing, there is surely something old that ought to be dropped. We've got to have the courage to find what we're doing just because we enjoy them, they're in our comfort zone, and we like them. Our specialists and county agents are really guilty. They won't turn loose of something that is easy. They have it locked up; it just

falls in place. If so, we need to turn it over to someone else, take on something new or expand it.

Well, there is something in this water issue for everyone, it just requires some innovative and creative thinking as to how we are going to latch on to it. We need some vision as to how to tackle it.

LISA AND BIOTECHNOLOGY: STATING THE CONCERN

Curtis W. Absher
University of Kentucky

Low Input Sustainable Agriculture (LISA) has been around now for several years and the greatest concern is that of confusion about definition. LISA still does not have a sharp and crisp definition to many agricultural professionals. Or it could be that expressions about the definition indicate an uneasiness about the meaning that is evolving. The uneasiness may come from barriers that have been previously erected in people's minds. Let me explain!

Low-input to many still means "no input" of pest control chemicals or chemical fertilizers. There is real concern and doubt that no-input and sustainable agriculture can be mutually possible.

Sustainable agriculture is what Extension has always sought--isn't it? Or have we too often looked at production efficiency and maybe short-term economic profit while failing to build in economic stability and contingency plans for the long run?

The LISA competitive grant program has been a definite source of unrest, especially among those groups that have been unsuccessful and because of the responses that have been received. The perception exists that grant writers have a better chance of being successful if they are not too experienced in the area that they propose to study. New coalitions are needed; but rejecting experience and scientific base seems to be inappropriate. Also there is a concern that the LISA data base might be a mixture of scientific investigations and testimonials.

Other concerns that come from the LISA proponents is that Extension has failed to convey to producers the use of natural or organic ways of farming, using animal and green manures, biological pest control and beneficial crop rotations. Does the LISA movement respect the economic threshold levels and concepts around which IPM and university fertility recommendations have been made? Many Extension workers feel that effort in these areas are not given sufficient credit! Sustainable agriculture does place a new emphasis on the training aspects of Extension as well as more emphasis on total farm management, interdisciplinary programming, new coalitions and new clientele, and the need for decision guides which can help answer "what if" type questions.

Now let us shift to biotechnology. Why is LISA and biotechnology considered in the same section? Biotechnological advances obviously can contribute to LISA by limiting inputs to control diseases, insects or increasing efficiencies in some way. No doubt we all hope for new handles on sustainability with advances in biotechnology. But low-input may not always be appropriate as the experience with bovine growth hormone (BST) indicates. BST seems to do all that it's expected to if treated cows are better fed and better managed than before its use.

A real concern about biotechnology and Extension comes from the need to work out the relationships between biotechnology research, industry, and Extension. The criticism has come that Extension won't be able to handle the biotechnology education. Why? To build on an analogy, do Extension specialists and agents need to be able to build a computer in order to use one? New and better products should be the result of biotechnology. Extension should handle their incorporation into programs.

We will have new opportunities in explaining the impacts of biotechnology and helping groups deal with policy that relates to the use of new products. Industry should not

expect Extension to sell their products but support open forums on the issues relating to use of biotechnology. Management and a holistic understanding of the various production schemes will be needed.

Extension workers will be challenged to be better biologists, better economists as well as better sociologists as we deal with new products of biotechnology.

INFORMATION AND EDUCATION NEEDS FOR A SUSTAINABLE AGRICULTURE

John E. Ikerd
University of Missouri

Sustainability Agriculture

The term sustainable agriculture refers to farming systems that are capable of maintaining their productivity and usefulness indefinitely. Sustainable systems must be resource conserving, environmentally sound, socially supportive and commercially competitive.

Farming systems which fail to conserve their resource base eventually will lose their ability to produce. Systems which fail to protect their environment eventually do more harm than good and ultimately will destroy their reason for existence. Sustainable systems must be ecologically sustainable.

Farming systems which fail to provide adequate food supplies at reasonable costs will not support social progress and ultimately lead to political disruption. Systems that are not commercially competitive will not generate the profits necessary for financial survival of producers. Sustainable systems must be socially and economically sustainable.

Ecology, Economics and Society

In the long run, there is no conflict between the ecologic, social and economic dimensions of sustainability. A system must be ecologically sustainable or it cannot be productive and profitable. A system must be productive and profitable over the long run or it cannot be sustained economically no matter how ecologically sound it may be.

Even in the short run, there is no conflict between ecology and economics from the standpoint of society as a whole. Industries which exploit resources and degrade their environment for unsustainable short run gains are not profitable in terms of social costs and benefits.

Such systems create an illusion of sustainability by failing to account for all social costs. One segment of society bears the costs that another segment ignores, or one generation bears the costs that a previous generation failed to consider. Social benefits exceed social costs only for those systems that also are sustainable.

However, costs and benefits for individual farmers may differ from costs and benefits for society as a whole. Farmers may realize short run profits with systems that mine or waste resources or degrade the environment. So in the short run, farming systems that are productive and profitable for individual farmers may not be sustainable.

Also, farming systems that are sustainable over the long run may not be profitable in the short run. Farmers who conserve resources and protect the environment may not be able to compete with those who respond only to short run profit signals of the market place. Potential conflicts between ecology and economics are important concerns for individual farmers and for society.

Low Input Versus Sustainability

Low input sustainable agriculture (LISA) embodies two separate concepts: low input (LI) and sustainable agriculture (SA). These two terms are related but do not mean the same thing.

The term low input is used to refer to systems which rely less on external purchased inputs and more on internal resources (Rodale). Some consider only those purchased inputs derived from non-renewable energy sources such as petrochemical bases fuels, fertilizers and pesticides as external inputs (Edwards). This qualification add clarity in some contexts but add confusion in others.

There is no clear division or point of separation between low input and high input farming systems. Thus, lower input rather than low input might be a more appropriate term. Systems

become lower input over time as they reduce their reliance on external or purchased inputs and increase reliance on internal resources such as management and labor. Higher input systems, on the other hand, substitute external inputs for internal resources.

Lower input systems may or may not be more sustainable than higher input farming systems. Lower input systems tend to be more resource conserving and environmentally sound than conventional systems. For example, lower input systems that use less synthetic, chemical pesticides typically represent lower environmental risks than do higher input systems.

However, major reservations and questions have been raised regarding the socioeconomic sustainability of lower input systems. These questions tend to focus on their productivity or ability to compete profitably with higher input systems (Ruttan).

Systems that are both lower input and sustainable, LISA systems, must measure up to socioeconomic standards of productivity and competitiveness in addition to the ecological standards of resource conservation and environmental soundness.

In some cases lower input systems may also be more productive and competitive systems, even in the short run (Dobbs, Leddy and Smolik). In many cases however, farmers may be forced to choose between lower input systems which are more resource conserving and environmentally sound and alternative systems which are more productive, more competitive and thus more profitable.

The search for sustainability in agriculture, in a practical sense, is a search for an acceptable balance between lower external inputs and greater profitability.

Farming Better

Sustainable farming systems neither minimize purchased inputs or maximize profits. Sustainability cannot be achieved through a predefined set of management practices or a recipe for success. The socially optimal balance between ecology and economics must be derived region by region, farm by farm, crop by crop, field by field.

Competitiveness and profitability of various systems can be changed through public policies which regulate, penalize and reward farmers for various conservation and environmental practices. However, changes in farmers' management decisions may affect sustainability more than changes in farm policies.

Farmers always have been willing to try to farm better. At different times the term better has referred to conservation, to production and to profits. Now, many are saying that better farming means more environmentally sound. But, systems that minimize environment impacts may be no more sustainable than those that maximize production or profits.

Better farming means balanced farming. Better farming means balancing ecologic, social and economic considerations for short run survival and long run sustainability. Most farmers can farm better than they are farming now. But, better farming will require more research and information that is relevant to a balanced approach to farming. Better farming will require integration of ecology and economics into a workable, farm-level system for sustainability.

Regulations, penalties and subsidies may be required to achieve sustainability in some cases. However, public policies that support research and information may be more important than regulatory policies in the long run. Funding of LISA research and education programs over the past two years has been a step in the right direction. However, the move toward better farming has barely begun.

"People are more likely to change their behavior if they believe they can change, are shown specific examples of what to do and are given a chance to practice their new skills so they build confidence in their ability. People need much more than a lecture." (Bandura) This should be a guiding principle in public policies which support agricultural sustainability.

Farmers need believable, research based information on workable, balanced systems of farming. They need to see these systems working on research stations and on their neighbors' farms. Farmers need decision support systems that will allow them to organize, evaluate, integrate, and synthesize information and observation into systems that are sustainable on their own farms. They need much more than a lecture.

Rising Costs of Specialized Systems

The first step toward better farming for many will begin with the realization that they can farm better than they have farmed in the past. The pursuit of competitiveness and profitability over the past two decades has driven U.S. farmers to greater reliance on external inputs. Competitive pressures have forced farmers toward greater specialization as a means to greater efficiency.

Synthetic chemical fertilizers and pesticides have allowed farmers to abandon crop rotations and mixed livestock cropping systems in favor of more specialized cropping and specialized livestock systems. Low energy prices also allowed economic use of larger, more specialized equipment and production facilities which encouraged greater specialization.

Increased specialization has allowed farmers to realize economies of scale in production, marketing and financing in their operations. Specialization has resulted in increased efficiency of farm operators' labor and management resources. However, specialization has meant greater reliance on synthetic fertilizers, herbicides, insecticides and other external inputs.

The trend toward greater reliance on external inputs has not been limited to synthetic, chemical fertilizers and pesticides or non-renewable energy based inputs. Specialization also has meant greater reliance on borrowed capital and hired labor, and on more specialized knowledge and management skills in the form of paid consultants.

Efficiency gains from specialization have been generally recognized and widely accepted for centuries as an economic fact of life. However, the reliance of farming on greater use of external inputs has raised significant economic as well as ecologic questions. First, there are growing indications of declining effectiveness of technologies needed to support specialization.

Insects are becoming resistant to insecticides and require higher rates of application or new insecticides for control. New insects sometimes replace the old. Beneficial insects often are destroyed along with the pests requiring even greater reliance on insecticides at higher costs. The same types of problems are appearing for herbicides as new, more resistant weeds appear after others are brought under control. In addition, herbicide carryover and build-up in some soils can cause problems with following crops.

Previously fertile soils have lost organic matter and natural fertility through monocropping or corn-soybean rotations year after year. Lower organic matter has meant less ability to hold water and nutrients in root zones meaning lower yields from a given level of water and fertilization or higher fertilizer and irrigation costs to maintain yields.

Other costs of increasing specialization are beginning to show up in the environment of farm families and farm workers. Health risks in handling pesticides, for example, have become a major issue in farm safety. These risks eventually translate into less effective pest control, higher labor costs or greater health risks for family members.

Chemical contamination of farm water supplies is another emerging concern of farm families. This issue, as much as any other, has increased the awareness of farmers to the potential environmental hazards of chemically dependent farming. Until recently, the environmental costs of increased use of synthetic chemical fertilizers and pesticides were external to the farm or imposed on society in general. The health risks to farm workers and farm families are internal costs and thus command the immediate attention of farmers.

Sustainable Community Economic Development

Specialized farming also has had significant impacts on rural communities which depend on agriculture for an economic base. Specialized farming operations rely primarily on external inputs for plant and animal nutrients and pest control. Greater demand for purchased inputs might be expected to support local farm supply firms. However, competitive pressures encourage conventional farmers to become larger and to purchase and sell in large quantities in order to survive. These larger farms tend to purchase inputs from more distant suppliers and sell raw commodities to large processors in distant markets. The result has been a continuing decline in the numbers of farmers and in agriculturally related economic activity in many rural communities.

Competitive pressures also have forced farmers to cultivate highly erodible lands which degrades the rural resource base and to use higher

levels of chemical fertilizers and synthetic pesticides which may threaten the rural environment.

Sustainability is as important for rural communities as for individual farmers. Sustainable economic development for rural communities is based on realization of the value inherent in geographically fixed resources in ways that conserve the nonrenewable resource base, protect the physical and social environment and provide an acceptable level of economic returns for those who work and live in the community.

In many rural communities, development of locally fixed resources including minerals, water, climate, and land has been based on substitution of capital and other inputs originating outside communities for local labor, management, and locally supplied goods and services. Thus, rural communities, like farmers, have become increasingly dependent on inputs and markets external to the community.

Many rural communities no longer depend on agriculture for economic development. They no longer have a sufficient agricultural resource base to support a significant agricultural component for their rural economy through conventional farming methods. They look to other industries which utilize other human and physical resources as a means for long run survival.

However, many communities may be overlooking the economic potential of a significant agricultural resource base because they are operating with a conventional agriculture paradigm. The conventional paradigm is that fewer and fewer farmers will continue to buy more of their inputs from distant suppliers and sell raw commodities to distant marketing firms and processors.

The sustainable agriculture paradigm is one of substitution of internal resources including labor and management, for external purchased resources while maintaining acceptable levels of productivity and profitability. Sustainable farming systems may require more farm operators, more farm labor and more farm families than do conventional farming systems. Sustainable farming operations in many cases will be smaller than their conventional counterparts.

In addition, operators of sustainable farms are motivated by environmental, social and economic objectives. Thus, they may show a preference for local markets and local input supply sources if it does not threaten their economic survival.

A sustainable rural community paradigm extends the concept of sustainability to the next level of aggregation. Sustainable rural communities must find ways to substitute management of resources that are internal to the community for externally supplied inputs while maintaining an acceptable level of economic and social well being. A sustainable agriculture may be one of the most valuable internal resources in developing a sustainable rural community. A sustainable agriculture could provide a stable, internal resource base for other economic development in many rural communities.

Strategies for Sustainability

There are three basic strategies for developing lower input systems that are also more profitable. The first is to increase input efficiency within specialized systems, the second is to develop more efficient diversified farming systems, and the third is to develop profitable markets for commodities that can be produced with fewer external inputs.

Increased Input Efficiency Environmental risks are more a result of misuse than of use of external inputs. Some environmentalists may contend that any use of synthetic chemicals in farming represents an unacceptable risk to the environment. However, the general public is much more concerned about measurable chemical residues in food and water supplies than about the fact that synthetic chemicals are used at all.

Some ecologists contend that specialized monoculture systems of farming are inherently unsustainable (Altieri). In a long run philosophical sense, this contention quite likely is valid. However, the greatest current threat to sustainability seems to stem from conventional production practices which support specialized farming systems rather than from specialization per se.

Regardless of their longer run sustainability, current environmental and resource risks could be reduced through more efficient use of inputs in specialized farming systems. In fact, greater input efficiency in larger specialized operations quite likely represents the greatest potential for reducing environmental risk from farming over the next decade.

True sustainability may require a change in the philosophy of farming from one of conquering nature to one of working with nature for the good

to mankind (Altieri). However, resource conservation and environmental protection are legitimate interim objectives until such a change in philosophy becomes widespread.

Application rates, timing and placement of fertilizer is one area for improvement in efficiency and sustainability. For example, nitrogen not utilized by growing plants eventually will either volatilize into the air or will enter surface water of ground water supplies. Nitrogen applied in the right amount at the right time at the right place will be used by the plant and will not contaminate water supplies. Wasted nitrogen contributes cost but no returns to the economics of crop production. Thus, more efficient nitrogen application could increase the ecologic and economic sustainability of crop production systems.

Similar possibilities for greater sustainability exists for use of insecticides, herbicides and other pesticides when in specialized farming operations. Pesticides applied at the right time and right place may control pests more effectively at lower rates of application. More effective pest control at lower levels of use reduces environmental risks and increases economic sustainability.

Resource conservation also may be achieved through more efficient resource management. For example, efficient irrigation scheduling may reduce crop stress while cutting use of water and energy. More predictable growth may allow more effective use of fertilizer and other inputs as well. Reduced tillage can reduce soil loss and cut energy inputs without sacrificing profitability in many situations.

Some intensively managed systems may use more rather than fewer external inputs. Some reduced tillage systems may require greater use of pesticides, at least in the short run. However, greater input efficiency means fewer inputs per unit of output and less potential negative spill over of inputs into the environment. Thus, net gains in sustainability may be possible through greater input efficiency without changing basic cropping systems.

More Efficient Diversified Farming Systems

The greatest long run promise for sustainability seems to lie with a return to more diversified systems of farming. Diversified systems are generally conceded to be more ecologically sound than specialized systems. However, questions have been raised regarding the economics of diversification. Diversified systems of the past were abandoned for specialization on many farms.

Gains from specialization are undeniable but are not the only route to greater economic efficiency. There are potential gains also from integration. The productivity of an integrated system can be greater than the sum of the products of the individual system components. This phenomenon is called synergism (McNaughton). Specialized systems sacrifice the potential gains from synergistic interaction among the various components that are possible with diversified systems.

An obvious example of synergism is the interaction between livestock and crop rotations which include high quality legume forage crops. Livestock add value to the forage and recycle nutrients back to the soil in the form of manure. Legumes add nitrogen to the soil, break row crop pest cycles and provide feed for the livestock.

Livestock without high quality legume pastures may not be profitable. Legumes rotations without livestock may not be profitable. However, integrated livestock, legume rotation systems may add profitability to the total farming operation. This is but one example of the potential synergistic gains from integrated farming systems.

Risk is another important, but often overlooked, consideration in diversification. Risks may be far greater in a specialized farming operation than in a diversified farming system with the same basic level of uncertainty in each system component.

For example, assume that one farmer has four enterprises and that each has an equal chance of returning a positive $6,000 or negative $2,000 net return in any given year. His average return is $2,000 per enterprise or $8,000 in total. If they all are positive he will make $24,000 and if they all are negative he will lose $8,000. But, let's assume that the enterprises are totally uncorrelated. Net returns from each enterprise move up or down independently of each other.

Now let's assume that another farmer specializes in one of the four enterprises but produces four times as much of it as our first farmer. The second farmer has the same chance of making $24,000 or losing $8,000 in any given year as the first has of making $6,000 or losing $2,000 on

that one particular enterprise because he produces four times as much of it.

Both farmers have the same long run average or expected net return, $8,000. However, the diversified farmer is far more certain of a positive return than is the specialized farmer. In fact, the variability of his net returns from year to year will be only about one-half as great for the diversified farmer as for the specialized farmer in this case.

Risk reducing effects of diversification are even greater if enterprise returns are negatively correlated, but will be less if they are positively correlated. Statistically calculated variance relationships between specialized and diversified operations vary from case to case. However, the general relationship will hold: diversified systems yield more stable returns over time than do specialized systems. This is the foundation for the old saying: "Don't put all your eggs in one basket."

Many farmers are only beginning to recognize the wisdom of this old advice. The risk of specialization seemed acceptable to farmers when export markets were booming during the 1970s. But, the risks became intolerable for many farmers during the farm financial crisis of the early 1980s.

Most crop producers are currently being shielded from those risks by a generous federal farm program. But, more and more are asking if there isn't a better way -- a way that will address the environmental questions surrounding modern agriculture and allow farmers to use the risk insurance provided by nature through more diversified farming systems.

Markets for Low Input Commodities

The third strategy for greater sustainability is to find profitable markets for commodities that can be produced with fewer external inputs. The organic food market is an example of one such market. Organic farmers have been important advocates of more research and information related to agricultural sustainability. Consequently, the whole concept of lower input sustainable agriculture frequently has been identified with organic farming. In reality, organic farming is only one example of one strategy for agricultural sustainability.

The significance of the organic food example is related as much to organic markets as to organic production methods. Few farmers can afford to adhere strictly to organic standards of food production unless they receive a premium for the commodities they produce organically.

Many farmers may be able to reduce chemical fertilizers and pesticides significantly without sacrificing profitability. However, total elimination of synthetic, chemical inputs typically will result in higher costs of producing commodities for conventional markets. Organic farmers may choose their farming systems for ecological reasons, but the market premium for organic foods provides the necessary economic sustainability for many.

The organic food market is not the only potential market for commodities that can be produced with fewer external inputs. Several attempts have been made to gain consumer acceptance for beef finished on forage rather than grain. Such beef could be produced on diversified livestock-crop farms with increased use of forages in crop rotations. Diversified forage finished beef farms might well be more sustainable than row crop farms or cattle feed lots. However, the key is to success in market acceptance.

A fundamental market oriented strategy for sustainability is to avoid head-to-head competition with large, specialized operations that produce basic, undifferentiated commodities for price competitive markets. Success with this strategy hinges on finding something for which consumer preference is based more on a subjective quality such as healthfulness rather than price, something that is not readily adaptable to large, specialized farming operations, and something that can be readily identified with ecologically sound systems of farming.

New markets may not provide sustainable farming opportunities for a large proportion of U.S. farmers over the next decade. However, such markets may be a means of survival for some who otherwise could not compete. More important, such systems could provide insights into the types of food-farming systems that will ultimately be required for true long run sustainability.

Market Niches for Rural Communities

New farming systems and new markets for commodities that are less reliant on external inputs are the best hope for developing a sustainable agricultural base for rural economic

development. Larger, specialized farming operations will continue to bypass local communities for input procurement and marketing even if they increase their efficiency in use of inputs. Smaller diversified farms, on the other hand, will tend to rely more on local communities for markets and for input supplies.

In some cases diversified farming systems that rely on crop rotations and integration of crops and livestock may be commercially competitive with specialized operations in producing undifferentiated raw commodities. However, a diversified farm is more likely to be commercially sustainable if one or more components of the system produces a differentiated product that can be sold on some basis other than price.

Local market niches can support individual or small groups of farmers who are willing and able to supply specific, limited markets with products that meet specific quality standards. The key to sustainability through niche marketing is to supply markets that are too small or too specific in nature to attract competition from larger, specialized producers and processors.

In recent years, consolidation of agribusiness firms has resulted in much larger units which concentrate on the largest consumer markets. As a result, the potential of profitable niche markets has been enhanced.

A large number of farmers supplying a large number of individual market niches can make a significant contribution to the economic activity of a community. However, sustainable rural economic development in general may require that the concept of niche marketing be applied to the community level of aggregation.

Community market niches are markets that are large enough to contribute significantly to the economy of a community or small group of communities but are not so large as to attract competition from large processing and marketing firms or from farmers in other regions. New markets of this size can provide diversification opportunities for a large number of farmers in a community or region. Such market niches provide opportunities also for local development of processing, marketing and input supply industries needed to support the new production process.

Most existing community-sized domestic market niches are obvious and thus have been fully exploited. As significant new niches develop, as in the current case of organic foods, they are exploited by farmers and marketing firms. But, communities may not need to wait for new markets to develop. Such markets may exist in large numbers in other parts of the world.

Community-sized niches in international markets may be more common than are farm-sized niches in domestic markets. If so, they remain unexploited because they are not large enough to justify the attention and investments from large multinational firms that are operate in global markets. Or, these markets may require a level of coordination of small scale production, specialized processing and personal marketing that is not feasible on a limited scale for large international firms.

Thus, opportunities may exist for whole farming communities to work together to supply international market niches. The opportunity for sustainable rural economic development using an international market niche strategy is largely unknown but could be critically important to the survival of many rural communities.

Public Policy for a Sustainable Agriculture

Public policies can be devised to internalize costs of society into dollar and cent costs to farmers. Alternatively, programs can be devised to reflect benefits to society in terms of financial rewards to farmers. To the extent that such policies are effective, farmers will find it in their short run, individual financial interest to make decisions that are in the long run interest of society as well.

However, effective government programs are difficult to devise and implement. A program designed to achieve one social objective may become an obstacle to achieving another. Government programs that were designed to alleviate financial problems of individual farmers, in fact, have become significant obstacles to the achievement of current environmental goals for agriculture.

Government programs have encouraged farmers to farm fewer acres more intensively and have pressured farmers to produce the same crops year after year. Such strategies are necessary to remain eligible for government loan and deficiency payments, federal crop insurance protection and federal disaster programs.

Such farming systems tend to rely on chemical inputs rather than crop diversity for pest control and fertility and thus represent a potential threat to ecological sustainability. The first step toward developing a policy for sustainable agriculture should be to remove the obstacles presented by current government programs.

Public Information and Education

Public policy need not be limited to regulations, subsidies and penalties. In fact, public information and education may be the most critical components in any policy for a more sustainable agriculture. The role of government is to provide information and educational services that are in the public interest to receive but are not in the private interest to provide.

The private interests of input suppliers and farmers alike have tended to support an agriculture that is increasingly dependent on synthetic, chemical inputs. Consequently, the private supply of and demand for information and management advice has tended to emphasize input intensive systems of farming.

The basic mission of public institutions is to address public issues, the issues not adequately addressed by the private sector. However, public and private interests can become confused in cases where public and private interest diverge. Sustainable agriculture may be a case in point.

Regardless of the cause, the primary emphasis of public agricultural research and extension work over the past three decades has been to increase productivity and profitability through greater reliance on purchased inputs. Relatively less emphasis has been placed on issues of resource conservation, environmental protection, farm size and the competitive structure of agriculture, and viability of rural communities.

Federal research and extension funding for Low Input Sustainable Agriculture (LISA) projects has been a small but positive step toward correcting this bias in past programs. Small amounts of LISA funding have been used as leverage by those concerned with the ecologic, economic and social sustainability of agriculture to establish major new program thrusts in some cases.

However, new LISA programs are being initiated in anticipation of greater financial support in the future. Lack of major increases in LISA funding for research and education over the next few years will seriously undermine these new initiatives. Support for LISA funding will not be forthcoming from the private sector. LISA is basically a public issue that will require continued public support and funding.

Priorities for LISA Research and Extension

Information and education obviously should be a part of any new government program related to sustainable agriculture. Farmers must understand such programs and have the information necessary to integrate them into their farming operations if the anticipated public benefits are to be realized.

However, substantial progress toward greater agricultural sustainability may be possible in addition to any positive effects achieved through government regulations or subsidies through programs supporting public research and education related to sustainable farming systems.

Research and education programs should be oriented toward the following basic objectives:

1. To help farmers and the general public understand the concept of sustainable agriculture and the necessity of a balance between ecologic, economic and social performance in achieving long run sustainability.

2. To help farmers re-evaluate their current farming systems, giving consideration to the rising private and social costs of specialized, input dependent farming systems and the potential profitability of lower input alternatives.

3. To generate the knowledge base needed to support agricultural sustainability through public research related to farming systems that are resource conserving, environmentally sound and socially supportive as well as economically viable.

4. To help farmers and rural communities recognize the interdependence between sustainable farming systems and sustainable rural economic development and to develop appropriate individual and community strategies for long run sustainability.

BIOTECHNOLOGY AS IT RELATES TO ECONOMIC ISSUES

Bill Marshall
Pioneer Hi-Bred International

I am struck by this morning's conversations and discussions and what we just heard on sustainable agriculture. They all mentioned the greater need for Extension. It doesn't seem like it was more than three or four years ago that Extension was saying, "Who is going to be our new client? We are going to have to do something; we are going to have to go after the urban folks." Now it looks like your plate is full, and I'm going to put another scoop on it.

My concern is that I don't really know where biotechnology and agriculture are heading. The advisory board brought up the point of BST three or four years ago, and they got a lot of grief for it. It wasn't until they supported that decision, and with hindsight the manufactures said: it was not a disservice you did us. What I felt bad about at the time was that the potential manufactures of BST saw us as anti-technologists or bloodits or people that just didn't like the concept of biotechnology. The point we were trying to make was that the first cat out of the bag in biotechnology was going to set the pace for everything else. What I would like to do this afternoon is again talk about biotechnology, not BST, and present to you an example of what I think is an inappropriate approach to a problem, an agriculture problem.

You will have to bear with me because on the other side of that coin I'd like to talk about one of Pioneer's products as an example simply because I know it best. I'm not here to sell products, but rather I want to use an example of what I think is the right approach to take. And lastly, I want to come back and talk a little bit about how Extension can help.

I will tell you ahead of time my understanding of how Extension was supposed to work in the beginning and has worked in the last 50 or 75 years, has been as a outreach of education from the faculty out to the field or the farm. I would ask you to start thinking about the reverse of that. Bring back to the faculty something that's learned out in the field. I think you heard a little bit of that this morning from the EPA people that were here. I want to build upon that same concept. Are you bothered by the remark that people say, "Why worry about products of biotechnology? If they don't make it in the marketplace, the private sector or whoever developed them is just out." I think there is nothing wrong with that; I think that's the way the system ought to work. But we are using an unbelievable number of human resources and money to develop products that might have no market. And furthermore it's a head-in-the-sand attitude to think that if we don't develop a "right" product nobody else will. For those right products will be developed by other people. Most likely that will be from overseas nations, and they will come here and sell those products. If it doesn't come to fruition and if it doesn't really pay off the way a lot of people think it will, I see that as a waste of valuable resources. Of course there is spin-off and all that good stuff we could talk about, but I would rather take that army of individuals and put them to work on real problems with appropriate solutions.

Now I would like to turn to alfalfa as an example for today. As you all are aware there is a genus and species of rhysobium called rhysobiummelalodi that colonize alfalfa roots. The biotechnology people are attempting to put genes in rhysobiummelalodi which will increase the ability of alfalfa to fix nitrogen by about 15 percent so the yield will be 15 percent higher. That is not a bad objective, although it's not the best. It overlooks the

fact that there are at least 15,000 rhysobiummelalodi. There are 15,000 strains of the same species, and they are somewhat specific for varieties of alfalfa. So one that associates with a particular variety of alfalfa is not going to associate with another. We don't really care about that unless we are in the genetic engineering business because we are going to coat the seed with "jillions" of rhysobiummelalodi that have been genetically engineered. So when that plant comes up and those roots start to form, all the rhysobium that are along the side of that root will be the ones that we put there. That sounds good; and the laboratory experiments and greenhouse experiments have shown that truly is the case. Rhysobium, even though it has a low preference to that particular variety, just by its very swamping nature will move into the plant root and form nodules and start to fix nitrogen.

However, what these people have forgotten is that alfalfa fields are usually planted for three years or longer. Every winter as that plant winters off, all the rhysobium leaves the roots and goes out in the soil. In the spring, the race starts once again. By that time that particular strain of rhysobiummelalodi has fallen to a extremely low level, no different than any other rhysobiummelalodi hanging around. So the following spring, where the plants and the different strains of organisms get together, at best you only get a 15 percent bump in yield the first year even with weather conditions just what you want them to be.

A farmer would like to put up wet hay; the wetter it is the less loss due to weather. But we all know what happens when you put up wet hay. Most hay is put up around here in the 16 to 17 percent range. By putting up hay at 25 percent moisture a farmer could automatically reduce the loss. Several years back we put up hay across North America, the United States and Canada at 25 percent moisture. The surprising thing was: 85 percent of that hay failed. But the interesting thing was the 15 percent that did not spoil, and why it didn't spoil. If the farmer was among the 15 percent that put up good hay in the first cutting, he would not necessarily get good hay again in the second cutting. So it was a hit or miss thing. But at any one time you put it up, you will get about 15 percent good hay, 85 percent bad. Our microbiologists studied the microbiology of the good hay and the bad hay and saw a difference, or thought they saw a difference. They removed those organisms that were present at a certain window which always led to the good hay. They rooted them and performed some studies on them and in the following two years re-introduced those organisms at the right time into 25 percent moisture hay. And in every single case, it was 100 percent good hay. You couldn't get above 30 percent moisture because it got a little dangerous if you got it too wet. But in the area of about 25 percent moisture, 100 percent of the hay was good.

It was important to put the organisms on at a specific time. If you put them on at the chopper, it's too early. You have to put them on at the time of bailing. Why, that's what we don't understand. We don't understand how the organism actually allows for good hay. They don't make a silver bullet, an antibiotic that kills the yeast or mold or fungi or whatever. But it seems to set up an environment whereby the hay stays fresh. We build probes for organisms so we could follow them specifically in the environment. At the particular time they are put on, they're only put on 100 times higher than what's already there. In other words, if we were to use this probe and go out and just probe all the hay put up in 25 percent moisture at the time of bailing, we could predict what would be good hay and what would be bad, just by looking at the levels of this particular microorganism. What we do at the time of bailing is just bump them up about 100 fold higher. About five or six weeks later, you will find they are back down to their natural level--which is quite low.

Earlier I said that a genetically engineered rhysobium would provide perhaps 15 percent more yield. Now I want to share with you what one would expect to see from using this kind of a product. When put on at 27 percent moisture with the product, it gave 1.46 tons of hay per acre. On a weight basis

that's .27 tons of protein versus .22 tons yield when put up at 16 to 18 percent moisture. There's a .05 ton difference per acre in these two levels. We then take the value based on dry soybean meal. That's 220 tons, which is $17.12 added value per ton. On a per acre basis that's $25 per acre.

So going back to what I asked earlier, I think the role of Extension can be, "How does one learn about agriculture, and what will work, and what won't work?" My concern is that we have a lot of scientists in the biotechnology companies that are not that familiar with the problems or with the appropriate solutions.

We have something in excess of 40 percent of all the Ph.D.s in agricultural research in the United States today who did not graduate from colleges of agriculture. Now I'm not going to stand here and tell you that they are unable to work in agricultural research or anything of the kind. What I'm saying is that you have tremendous knowledge and value that you can bring to these people because a lot of this research is not only going on in independent biotechnology companies, but it is going on in faculties in colleges across the country. Bring to them what will work, and what won't work. Bring it to them early on, before they get so wrapped up with this technology that they fall in love with it, and they can't walk away from it under any circumstances. You have to play the role of the devil's advocate, and that is not always the easiest thing to do.

What we need to do is show how to make things work for agriculture and for society. I think biotechnology can do that if it is used wisely and broadly. If we look upon it as simply genetic engineering, moving genes around, doing something that attracts some investors or gets some media coverage or is just down and out right sexy, it is not going to serve agriculture, and it is not going to serve society. I think that you could easily be in the driver's seat to go to people and say, "We would like to work with you, but we don't understand what problem you are trying to solve," or, "That is a big problem, but the approach that you are using is not necessarily the most direct."

FUTURE OF THE SOUTHERN REGION EXTENSION PROGRAM: WHERE ARE WE HEADED? DIRECTORS' PANEL

Roy Bogle
Oklahoma State University

I am going to simply go through some points that came to mind through this meeting that, as I told someone, kind of reinforces my biases. I don't intend to give new knowledge because I think we had a good opportunity for the outside speakers to provide some of that for us. I'm going to start off pointing out a little bit of the report that Ray Cavender gave, and Bud Webb alluded to, in terms of the Southern Directors accepting the task force report for the restructuring of our program committees. It was no surprise to me that the Southern Directors did that. I've been working with the group for over five years, and the Southern Directors have a tremendous amount of faith in our program leaders and the people we put to work on task forces. I have told the program leaders: if you have a recommendation coming from specialists for a workshop, you decide if it's go or no go and what modifications are needed. You are closer to the topic than we are. We are very happy and have no problem in holding you people responsible for those kinds of decisions.

And the same is true with the task force that Paul Warner led. Several of you were on that task force. I think the Directors simply had faith that the task force members spent a good deal of time looking through our existing structure and taking a look at what type of streamlining would be necessary to move us down the road. The Directors did have a bias; they were interested in seeing more opportunities develop for multi-disciplinary, cross-programming activities. This new structure, that was adopted by the Directors with no questions and appears to be accepted by those of you that it will more directly affect, is very gratifying. It's kind of like you and we have now provided the truck. It's up to our program leaders and our staff to decide what we are going to haul in the truck, whether it's going to be old hay or whether it's going to be people. We simply provide the mechanism; good people can make any system work. By the same token, staff can screw up any system if they want to. So we simply provide the truck for the system to carry that out through the task force recommendations.

I also want to compliment the Program Planning Committee for a joint meeting that had joint types of ideas and possibilities and for the outside speakers you brought in. Those were not just speakers that told us what we wanted to hear, but speakers who gave us new ideas and also told us some things that we didn't like to hear but needed to listen to anyway.

As we take a look at the national initiatives, some questions have come up and need to be resolved. Whether they are real or just perceptions, they are important problems that have to be resolved. There were some early fears that I heard about: Are we going to lose identity?, Will departments lose identity?, Will specialists lose their identity? I hope for the most part we are past that, but I'm sure we are at various stages in the states with our staff in that thinking. The second question is: How am I going to find time to work on multi-disciplinary task force programs when I'm still expected to carry out what you hired me for? As I look at it, Bogle's personal bias is that most of the staff we pull together for some of these interdisciplinary activities are simply lending their expertise of what they were hired for. Whether it be as a soil specialist or

whether it be in pesticides or whether it is something else, they simply add their expertise in a joint effort to try to get some cynergism. But I'm sure we are still not all feeling comfortable about that. Those staff that have to be concerned about promotion and tenure often come up with the question: How will we get credit from department heads and peers for activity in a joint effort when we basically only look at what is done in terms of scholarly publications--whether it be research, Extension or materials developed? We've got to look through that and help prove to people that administrators are giving or will give credit and will recognize joint activities that take a certain amount of time and require scholarly activities to make the contribution.

The fourth point deals with some of the frustrations that all of us have. There are some subheadings under the fourth point. One is the expectation for Extension or us as individuals to take on new educational program responsibilities without new resources to do it. Most of us resist that type of connotation. But as you heard from a couple of our outside people, that's the expectation they have. Another realism is the fact that in most states we have fewer real dollars today than we had five years ago to carry out educational programs. In some cases we haven't even kept up with inflation. So one of the things we have got to learn to do, and it's not easy, is to decide which things we are going to put lesser emphasis on or give up completely, and also where we can learn to work smarter.

Bud Webb mentioned AG*SAT this morning. In Oklahoma we are in about our fourth year of working with satellite delivery programs. We have satellite dishes in every county. We've got an up-linking system. We are broadcasting 20 to 30 programs a year. Some of you have participated in those or have benefited from them. The idea of going to a national AG*SAT system, I think, is the next step down the road. I am particularly interested from the teaching viewpoint because we are still not able in Oklahoma to hire all the agents we want with a master's degree. The quality of the pool is not there so we are still hiring bachelors, but we require them in 7 years to have a master's. This AG*SAT, as far as the teaching of graduate students, may help our staff to get some advanced degrees more easily than some other approaches they might have to use. All this as well as our use of it for Extension programming.

As we take a look at trying to reach new clientele, it's been said and I agree, we dare not give up our traditional base clientele. But I think we need to recognize that our traditional base clientele's needs are changing. So we need to take a look at working with that group while meeting the changing needs they have.

In my state as I look at the federal level, I don't see new dollars coming for baseline programs; what we call 3b, 3c funds. There are no new dollars coming for undesignated uses. The only hope that I see are the new projects, the new initiatives--the water quality, PLAT, some of these things. Whether we want to buy into them or not, those are the only kinds of things that are probably going to get the new funding. We have to learn to live with that. Our colleagues in the Experiment Station are much more used to that type of approach then we are. I think the game is changing. I have heard from a number of our colleagues in Washington, D.C. that business is not as usual, and I doubt in the perceivable future it will go back to the way it was.

The fifth point deals with Extension's role in biotechnology. Earlier we heard here, and a number of groups have put together reports pertaining to what Extension could do and how to fit into biotechnology. Perhaps I have just been in the business too long, but I don't see a major problem for Extension fitting into the era of biotechnology. What did we do when fertilizers came along? What did we do when hybrid corn came along? What did we do when artificial insemination came along? Our staff, primarily starting with our specialists, boned up, learned about the new technologies, provided in-service training for staff and delivered educational programs. I guess I feel that as items of biotechnology come along, we will simply follow the same pattern. We will look to our counterparts in

the research community at the university, our specialists and combinations of the two to learn what is going to be, to help determine the liability of where it works or won't work, how to use it, and we will put together educational programs. Maybe I'm naive, but I guess I just have faith that as change agents, which we are, we are going to be able to adapt to it.

John Ikerd talked about the benefits of biotechnology and the small percentage of it. I think the major benefactor of the new biotechnology is going to be the consumer--quality products at cheaper prices. They don't really recognize it because it generally comes on gradually, but the real early benefactors are going to be those farmers and ranchers who become early adopters. Those are the people that first put in bulk tanks because there was a premium given on milk available for pick up by bulk tanks. If it is the hormone that increases milk production of the cow, the earlier adopters will pick it up. In time the market will work its way out, and they will lose that extra benefit. Those that didn't adopt it, will never benefit.

Again I want to say that I think the committee did a good job at taking a look at their goals dealing with economic viability, environment concerns, the sustainability (LISA) and biotechnology. One of my responsibilities representing Extension directors in the Southern region is on LISA. I won't take time now but if you have any particular questions on the LISA projects as far as the Southern Region is concerned, I will try to answer those questions later. My time is up, thank you for yours.

Wayne Jordan
University of Georgia

I don't know where to start. There are a lot of things. This past year as a new director, almost every time I've been asked to talk to an Extension group its been: Where are we going? Where are we headed? Where do we go from here? What are we going to do different? So, I've about run out of ideas. I think, as Roy said, what we've been about here in the last three or four days is largely dealing with where we are headed and how we are going to get there. I don't know if I can shed a whole lot more light than some of the ideas already presented here.

I would point out that one of the things we are going to have to deal with is the continuing threat of declining resources with more competition for those same resources in the state and at the national level. The Experiment Station system has pretty good experience and expertise, I guess you might say, at going for competitive grants and dealing with competitive grants. I'm not sure in the Extension system we have honed our skills in every state, probably haven't in Georgia, to the point we ought to be for going after competitive pools of resources. That is an area we need to develop further.

I think it was alluded to once or twice this week that the complexion of the state legislatures is going to change from the point of view that it's going to represent decidedly different support bases--namely non-agricultural. So we are going to have less agriculturally oriented state political bodies to deal with. That means we've got to package our programs, our ideas and our thrusts in a way to appeal to them as well. Even though we understand and know that community development, rural economic development, agricultural profitability and sustainability are very important, we have to package them as we present our offerings to the state legislatures and to our congressmen in such a way that the programs appeal to them. The programs have to catch the legislator's attention so they can recognize them as something important for their constituents. I think that is going to be a big challenge for us.

In the university setting, we are going to

see a continued pressure to assimilate the Extension faculty into the teaching and research faculty under the cloak of a gain in efficiency. I think those of us in administrative roles with the Cooperative Extension Service need to be very much aware of that and not be sucked into it too easily. I question seriously that we gain anything in efficiency. In fact, I think the Cooperative Extension Service stands a great chance to lose tremendous flexibility and effectiveness. It doesn't make any difference how efficient we become if we become ineffective, it's all for nothing. In fact a greater issue that we need to sometime talk about as a Cooperative Extension Service is: What is the future of and where are we headed with the land-grant universities? Are we losing some of our land-grant mission and philosophy on the part of our upper administrative people in the universities?

I want to say this about programming. While a lot of our discussion has been around reorganization and restructuring and having gone through the process of changing directors and other administrative positions in Georgia, I understand the anxiety that people in the organization have relative to that. I understand the anxiety that you who have been in a comfortable sort of an arrangement have enjoyed. That is fine, but content and results are much more important than structure. Let's not spend too much time at our regional, national and state levels talking about organization and structure, how it used to be and how we want it to be, and lose sight of the content of our programming and the results that will be achieved. Structure helps us in that it is the means to the end, but it is not the end. I think that our emphasis is still going to have to be very much in tune with what that state needs. We get some ideals from Washington in terms of broad issues; we fine tune it a little more in our regional meetings; we confirm some things that we felt or we have some new ideas presented to us. But when we go back to the state and disseminate down to the counties, we have to keep in mind that all of these things may not be what we need to put time on in our state. We have to be in tune with state needs as well. We cannot forget some of those targeted specific issues at the state level even though they may not be very important to our surrounding states or not at the same level of intensity.

We should not lose sight of the distinctive and real advantage that we have as a Cooperative Extension Service, of this network of county delivery points. With that in mind I think we have to be careful and as we come together in national and regional groupings of program leadership, give thought to the fact that in a sense there is a gap here. We really don't have many people here who are listening to this and speaking for those who have the responsibility for delivery at the county level. So let's not get too far away from them as we pull back and look at broad programs and broad issues--even though we are going to have satellites, computers and all that kind of stuff. I can imagine that fifty years ago, or whenever it was when the first radio broadcast began to be utilized in Extension, how some of the cynics sat there and said, "We are in trouble now. That's going to ruin the Extension Service. We won't need these county agents anymore. All you have to do is tune in to that radio." Now we are saying, "All you have to do is tune into that TV." We have an uplink and a downlink; we have a computer with a huge database. Now that is threatening to some of the county people who are not real forward thinking. It may be even threatening to some of the rest of us. But it shouldn't be. Typically those kinds of things do what? They generate more questions and open up more new problems than we can handle. If we don't have somebody out there on the ground to deal with some of that, we are going to be missing a bet.

Interdisciplinary is a term we often use. Issues programming, interdisciplinary committees, teams, task forces and all that, they are very real. Many times specialists, agents and others that find themselves assigned to or attached to one of those units really think its over and above their workload. They don't really know what's expected out of them. Some of them worry that they are going to lose their identity or their subject

matter. We need to try to help convey the notion that it's interdisciplinary; we are doing our planning; we are coming together and coordinating. But ultimately you take back from that table the same skills and the same disciplines that you brought there. You are going to deliver through a multi-disciplinary approach, through single disciplines. You are going to do a lot of delivery back through your discipline. You weren't put on the group arbitrarily; you were put on the task force or committee because you could bring to the table your discipline. Once we decide what our big program is going to be, there is a disciplinary side to that thing that you've got the skills for. We get to talking like we are going to put everybody in the pot and stir them up, and they are going to all look alike, sound alike and talk alike. That is not the way it really works. Eventually it has to be delivered, and if nutrition is my specialty and food quality and food safety is the issue, when we get our program together, who's going to deliver the nutrition side of it? Not an agronomist. An agronomist might be delivering the side of education to farmers. The other caution is that we should not spend more time talking to one another than we do talking to our audiences.

Bud Webb
South Carolina

I love these times on the program because it gives you an opportunity to let some of your personal biases show instead of having a script to follow. I think the thing I would like to do first is to share with you my perception of where Extension is today. All of us, particularly since we had the executive budget several years ago that recommended a 59 percent cut, have had to wrestle with the questions: Is Extension still a valuable organization? Has it out lived its usefulness? Has it lost sight of its vision? I think we have come a long way in positioning Extension where it can make greater contributions in the next 75 years than we have ever visualized. That is not to diminish what we have done in the past in any sense of the word. But as I look ahead and see society, I think the role for a viable, effective Extension educational public outreach program emphasis is going to be greater than it ever has been before. It's going to be different; there is no question about it. How do we deal with municipalities, with municipal waste disposal? That wasn't in our plans of work several years ago. I hope you feel good about your profession still. I think the opportunities that we are going to have in the days ahead will be greater than ever before.

Let me touch on just two or three things. As most of you know, President Bush is now saying he wants to be known as the education president. The national governors' conference has a task force on education chaired by our governor in South Carolina, Carroll Campbell, and Governor Bill Clinton from Arkansas. They met at a seminary in Virginia about two weeks ago. I really get concerned when I see us looking at our educational system from a national perspective and not giving any consideration to what happens before a kid reaches five years old and enters kindergarten. Pretty good research has recently shown that 50 percent of the knowledge of a 17-year-old is gained before that child reaches five. If any of you have raised children, you can relate to that I think. Yet, we are saying we are going to solve all of our educational problems if we just focus on kindergarten through grade 12 and higher education. I don't believe that. I think if we look at our youth, where society is heading and the problems that are facing society, we've got to focus on what happens to the family and the structure that these kids are being raised in, the values that are being instilled in them, the work ethics. A kid coming out of a college now with a strong work ethic has got his head and shoulders above everybody else because most of them don't have the work ethic that you and I have. I'm personally convinced that people who grew

up in a rural setting and particularly on a farm, traditionally went into the job market with a work ethic different than almost any other. You knew the day didn't start at eight o'clock and end at five. It started at daylight and ended when the job was done. Extension with our national network already programming for youth and families have an opportunity to play a very vital role in the total educational system and help determine what the destiny of our society is going to be.

One other thing that we don't give ourselves credit for is the role Extension can play as a third party or facilitator. I think that is going to become much more critical in the future. In the Monsanto Project in South Carolina, Extension was a third party between the researchers and private industry to gain public acceptance of releasing some engineered microorganism. In South Carolina, high technology commercial agriculture is very dependent on the local county agent to be a third party in helping deal with our state department of health and environmental control and the list of compliance regulations. I hope our county folks don't feel that we are moving in a direction that is going to make them obsolete. I think it's far from that, it's going to put them in a position of playing a much more vital role.

External funding, I have to touch on that one. Extension has never felt the necessity that our research counterparts have had in seeking external funding. It really concerns me. If I read the deck the way I see the cards on the table, we're not going to be able to do the things that we are asked to do and meet the responsibilities and opportunities we have in the future with appropriated funds. It is simply not in the cards. But I'm convinced there are as many dollars out there available for educational programs as there are for research programs. I will hold up South Carolina as an example. We still haven't gotten individual units to be very aggressive in seeking funding. But at the statewide level or as an organization, we got $1.1 million from Kellogg for rural leadership development, $3 million for youth at risk, and we are well on our way to getting $943 thousand for our statewide video network. I could go on. The money is there. We could have good strong programming with base appropriations with county, state and federal support. But if we want to have that measure of excellence that I think all of us aspire to, we have to be committed to go get the dollars. The competition is tough, but money is out there, and we simply have to change our mindset about that.

I will follow up with a couple of comments that I would have liked to have made a while ago when I was talking about the strategic planning council. One of the first things we did was survey all of the directors, the 1890 administrators, ES staff and some of the ECOP committees. I think there were a total of 82 responses. There was a whole series of questions relative to the national initiatives. How much had they committed or did they anticipate committing additional funding and those sorts of things? Two of our current nine initiatives came out head and shoulders above the others in terms of the level of support the directors and administrators anticipated giving to them. They were water quality and youth at risk. There was a significant drop off before you got to any others. As we have tried to evaluate or wrestle with the national initiatives, and I think as you have tried to program, there are some of them that definitely need refocusing. Most people don't know what we are talking about when you say building human capital. We are doing something in South Carolina that we call building human capital, and Texas might be doing something completely different that they are calling human capital. A lot of the things that we are doing in youth programming we view as building human capital, but we call it youth programming or youth at risk and not building human capital. The council will make a recommendation to ECOP, ES-USDA at the land-grant meeting that some of our efforts (the previous national initiatives) be folded into our on-going program, some be retained and some be re-focused.

The major emerging issues or the new endeavors that we anticipate as a council facing Extension in the future are probably four. Bob eluded to some of the issues this

morning. Waste management is definitely emerging. One of the speakers said there is a waste management crises facing this country. We are slow to realize that, but I believe this is one area where we have the opportunity of really being out on the cutting edge. You are to be commended for your session focusing on that issue.

Global climate change, global warming -- I feel sorta like I do about biotechnology. I don't know what Extension can do about global warming but I think it's an issue. There was a two-day conference at VPI last week and some speakers there were saying that within 10 years, around 2000, we are going to see a two-month shift in seasons. I don't believe that but I'm sure they are smarter than I am. I don't understand what is happening up there, and I don't understand the implications but I think it's a issue we've got to address. If Extension and the program leadership committee can develop a white paper that says this is what we know about global warming or climate change and this is where we think Extension can play a role, then we position ourselves to be out on the cutting edge. We can go to other agencies and other units and say we are aware that this is occurring and some problems might be coming down the pike. It will put us in a different posture than what we have been in the past.

International marketing and merchandising--our profitability group has already put a strong focus on that but I think it has to have more emphasis. We are operating in a global economy. I don't think any of us will debate that.

Food quality and safety--that's my kid so how could I forget that one. Our annual conference this year in December will focus on the linkage between agriculture and home economics as we try to look at our food production system, what affects food quality and safety all the way through the production chain. We simply have to take a more holistic approach and focus in on the changes. Changes are going to have an impact on our production and what is put on the supermarket's shelf for our consumers in the days ahead. So we've got to be aggressive and out front with that issue.

Let me make one more challenge. As you look toward building linkages within Extension, between agriculture and natural resources, home economics and those things, please look at how you can build linkages with the rest of the land-grant universities. I think that is going to be much more important as we talk about the role Extension can play in the future. The primary reason or one of the major reasons we received the two Kellogg grants was because the crux of those proposals was to pull the total resources of the land-grant university together to focus on the problems of the state. We simply cannot do all the things that Extension is going to be asked to with the resources in the college of agriculture. I don't mean that critically in any sense of the word but as we deal with county governments we've got some people in the political science department across campus that can play a very vital role.

Let me use one example of what I'm talking about. You have to play with the cards you're dealt, and no matter how dark the clouds, you look for that silver lining. There may be a silver lining in hurricane Hugo. Senator Hallings from South Carolina is going to introduce some emergency legislation to help our state recover from the effects of Hugo. There was a group that met on campus and came up with the concept of the land-grant university putting together "swat" teams that would go into communities and help them address specific problems. Then the question came. Just how are we going to do that? We have asked for $5 million in this emergency relief effort. We would use our state-wide network that is already in place, county agents at the local level, to work with the communities and identify the problems that they have to overcome--water supplies, communications, infrastructure, dealing with stress of the kids. You know, we've got thousands of kids in South Carolina who don't want to go to bed now because they are afraid the storm is going to hit again. Let our local county staff identify those problems and then come back to the university where we put together a swat team that would include maybe an architect

or a civil engineer if it was something structural and go to those communities and provide the technical support they need to help them overcome their problems. Think about what that would do for the Cooperative Extension Service in South Carolina if that comes about. The level of visibility and credibility within the university would be at a different level than it has ever been before. More importantly the level of visibility and credibility with all of the shakers and movers in these communities that are struggling with these problems that were created by the hurricane would be greater than it has ever been before. That level of visibility and credibility transfers into support in one form or the other. So as you look at linkages, look at the rest of the university also.

Ted Jones
University of Arkansas

I know a lot of you have read Tom Peters', **In Search of Excellence.** He has some points which I think are pertinent. He said that the modern corporate leader is successful if he can keep the herd generally going west at the same time. Now, does that fit Cooperative Extension? Can we keep the four program areas and our new initiatives generally headed toward some sort of a commonalty of objective. Extension directors don't have to have new ideas or necessarily good ideas on a regular basis, but we have to be able to recognize new ideas or good ideas on a regular basis. That's where you and your colleagues come in. I suspect agriculture and community development program leaders put that same principle to work. You don't have to have all the good ideas, but you need to recognize them when they come up to you. I think that is important.

I'm going to hit two or three points, some more local or more nitty gritty than my colleagues. I think the trend toward declining real resources is going to be with us for some time. We in Arkansas are just starting to hire a development officer in the college of agriculture to work with the development officers at the university level to see if we can tap some of the private funds to complement on-going programs. I don't know if it will be successful or not. We are probably five years late in getting started, but if we get half as good as South Carolina in a short period of time I will feel pretty good. We were able to get $900,000 last year from state energy money, but that's a totally different ball game than trying to go to private firms and talk them into coming forth with funds to support our effort. I think when you look at that, no prudent manager puts permanent staff on soft money, no matter where it comes from. I think we are looking at probably a decreased number of personnel from the state specialist throughout the system as we realistically look to the future. It's a given that when resources become tighter in organizations, the infighting becomes more intense. It's just a matter of life. That means among program areas and program leadership I ask you to present your best argument and your best case, and then realize you aren't going to win them all. In fact, you probably will win hardly any of them. But then go along with the decision within the organization. I think we have more opportunities for delivering needed programs today than ever before.

This leads to what I think is one of the real challenges Cooperative Extension has during the next few years. That's linkage, deciding what groups we can link with and still maintain our mission and begin a win-win situation with others. Let me give you a couple of examples. We probably should have linked up with the Soil Conservation Service 20 years ago rather than just last year in terms of water quality. We have an individual agreement with each of the soil and water conservation districts in Arkansas. Our position is, as the educational arm, we are as valuable to the soil and water conservation district as SCS is as the technical system. I don't know whether that is going to work or not, only time will tell.

We have linked up recently with a unit in

the college of business administration within our university system on a bid procurement plan where we are using our outreach arm to get information out to small businesses to bid on state and federal contracts. Then our agents call in to specialists, if you will, from this other organization. So we are using specialists and going through our office to the non-farm businesses in most cases. We are just getting started. They've got something over $350,000 in contacts and 35 or 36 jobs. Just last week Mark Peterson and I met with a unit from the University of Arkansas, Little Rock, not the land-grant university, to see if there are ways that we can link up so they can use our outreach arm. Our counties could use them as specialists and still maintain our integrity and their integrity, and we can maintain the support. We are going to be looking at more of those opportunities for linking up within the state, really exploiting in a good sense the very strong 85 county offices out there which are in contact with the local leadership. Don't think I'm suggesting we move away from hiring agriculturally trained and home economics trained people. I'm really not. I think we have to maintain that to be a part of the land-grant university. But agents can broker other resources just as well as they can go through an entomologist, or plant pathologist.

Another thing, many of our agricultural specialists particularly are moving more and more into applied research, and that's not without some hazards. You have to work very carefully with your county agents when you do that. The key is, of course, will the specialists still serve the needs of the county agents at the same time they are doing their applied research. For two reasons, I think that's happening. One, our Experiment Station brothers are moving backward to the more fundamental research, bio-tech research. The farmers are still demanding applied information. Also, our Extension specialists are very successful in getting funds from the check-off programs in Arkansas. That's not met with great favor from the research departments, as you would expect, so we have to continually work to maintain a relationship within our own family as we move in this direction. I see this continuing.

Another point, I don't know if it was a joke or not, but the need for Oklahoma and Arkansas cooperating with a poultry specialist or two was talked about. That's one we need to look at. Can we have multi-state specialists and still do the job we need to do? Missouri has already made some overtures to us in terms of rice specialists coming primarily from Arkansas since we are so much bigger in that. There may be opportunities where we can look at that as a means of stretching scarce resources.

I have talked about the linkage, a little bit of philosophy I suppose. To be a good program leader as well as an effective director is to expect the unexpected. We had an example in Arkansas, and I didn't expect the unexpected. Four months ago I never expected to be asked to move to a different headquarters within five months and come up with the cost of paying the additional rent. So you have to be prepared at any time to take on some new challenge that will appear and still keep the program moving because it's program impacts and results that will determine whether we are around for a significant length of time.

Let me close by saying I do appreciate the opportunity of meeting with you. I think one of the reasons that I really enjoyed this, not only because it was well organized and a good program, but it was simply exciting to think about some of these things.

RESPONSE OF 4-H

Tom Rodgers
University of Georgia

Number one let me say I enjoyed the meeting. Having a bachelor's degree in animal science and a master's in agriculture economics, it was a good opportunity for me to think about some things that I hadn't thought about in a while.

I want to get you to think just a little bit about involving the family, particularly young people, in your programming and give you a few examples that I think came through this week. I learned this week that each one of us in this room is responsible for one ton of garbage per year. That's pretty incredible. If your house is like my house, your kids are responsible for more of it than you are. Kids respond to a cause. Adults respond to a pocketbook. We talked about the fact communities and individuals don't get serious about disposing solid waste until it costs us. At some point we are probably looking at $50 a month to have our solid waste picked up at the curb. That is going to make an impact on adults, but until it gets that way it's not going to make much impact. Kids can get involved in a cause. You can excite them about the degradation of our environment as it relates to solid waste.

I don't know how many of you have teenagers. Some of you have had teenagers, and they've gone like mine. I'm about to lose my youngest teenager. You know about water and young people. They don't have any concept whatsoever that water is a limited resource, at least clean water. When they take a shower, it goes on for hours. We know that the treatment of water is a real problem, and we need to reduce that treatment. It's not just water quality but water quantity. We can make an impact on young people. There are a lot of them out there. What if we turned young people loose on our communities to try to save water? What if we had 4-Hers and young people working just to get a shower restrictor in every shower in our community? We can make a drastic impact on the consumption of water.

Economic development--my wife leads a basic adult education program for our vocational institute in 12 counties. She doesn't have the time to go out and take the money from industry to set up classes to teach their employees basic skills in reading and mathematics. Hear what I said, to take their money. They aren't offering free programs. They're selling the program, and industries are buying it. Last week I heard a speaker say that within the next ten years private industry will have more impact on public education than public education has today in educating young people. If we want to do economic development in rural areas, all we have to do is assure these plants and companies that we are trying to attract that we have a quality work force that is high in basic skills. They can read, they can write, and they can do basic mathematics. Then economic development will come. That's where economic development has to start, and I think we can make a difference.

I think we have better work ethics in rural communities in our state than we do in urban areas. I think that is one of our advantages. I think in Georgia we foster a strong work ethic in 4-H, and that is one of our real strengths. What I wanted to do was to get you thinking about involving the kids and families in our program. I can't think of any program in Extension that shouldn't have a component for young people and a component for families. When it has a complete package, involving all the kids, then it's going to be effective. 4-H belongs to Extension Service and Extension Service belongs to 4-H. What we have to do, and I tell my colleagues and Wayne all the times, is to use 4-H. I think

4-H has some things to offer the Extension Service, and I think Wayne will tell you it does.

As it happens right now, the chairman of our state Board of Regents is a 4-H alumni. He had an animal project, a dairy science project. Probably the most powerful man in our state government, the speaker of the House of representatives, loves 4-H for some reason. Use 4-H to get to those people. We did a survey of our state, and we found that 31 percent of all Georgians are 4-H alumni. We found that 21 percent went to 4-H camp. I know those people feel a loyalty to 4-H and feel they have a debt to 4-H. That debt should include not just 4-H but a debt to the Extension Service. We need to use 4-H.

Let me talk just a few seconds about youth. I think most all of you in this room probably have kids. So you are a youth development expert. You know about as much as any youth development expert in the university. You have more practical knowledge than most of them do, but we have some real problems with young people today. It's not drug abuse, it's not the fact that we are consuming so much alcohol, it's not dropping out of school, or teen pregnancy. All of those things are simple. The problem with young people is they don't feel good about themselves. They feel powerless; they don't have strong self concepts. If we really could get our young people to take control of themselves and have a sense of power over themselves, we wouldn't have all these symptoms. Or they certainly wouldn't be at the level that they are today. What we've got to do is empower our kids.

I saw something the other day I think really came home to me because I am guilty of it. We look at kids from primarily three different areas. Number one is object. About 90 percent of the programming that we do, we look at kids as objects. I'm the adult, I know what is best for you, and you are going to do it. That's what I do with my kids, and it doesn't work. I won't ask for a show of hands of how many of you consider that your philosophy for working with kids. The second philosophy is, let's put them to work. Young people have things to offer. They're smarter than they have ever been, they're more energetic than they have ever been, and I think they are ready to work. We can put them to work, and we can involve them from an honest standpoint, not just use them.

Several years ago a study was made that pointed out three Cs of youth development work. I think this is youth development theory, the best I've ever heard, and I've been through a lot of training. The first one is competency. That deals with a young person's knowledge. The second one is coping. That is allowing them or empowering them to get along in a social environment--team work, acceptance of authority, feeling of self-concept. The third and the most important one, and I think the one we can really get after in Extension is contributory. Let's ask our young people to contribute. Let's ask them to do something. Too often we come in, we set you on your fanny for three days and pour the knowledge in. It doesn't work particularly well for us, and it sure doesn't work for young people because they spend six hours everyday in a classroom doing that. We have to involve them. If they're involved, they will take ownership, and they'll change. We still have a problem, but it's not nearly as bad as it was in the 50s. What turned around littering in the United States? How many of you have been chastised by a child throwing a cigarette wrapper or a can out of the car? I have. My kids turned me around on litter, and they can do it today. Let's put them to work.

I think I can speak for my colleagues. That's a little bit risky, but I think I can. We are ready to play as a team. We are doing more team playing in Georgia. We have a long way to go yet, but we are getting there. As soon as we do get there then I won't worry about the future of Extension Service. There are too many people out there that we have helped for anything bad to happen to us. The support is there.

CONFERENCE SUMMARY

Paul D. Warner
University of Kentucky

Let me share with you some of the ideas I found especially helpful from the different speakers. I am sure each of you have your own concepts of what you found most useful.

Solid waste was put on the agenda because we saw it as a possible emerging issue. I have heard some of you here confirm that notion. Those of us who have attended national and regional conferences on solid waste would agree there is a "Not in my Backyard" mentality. It is a problem no one wants to accept responsibility for, and yet everyone participates in the production. I applaud Derwood Curley and the Virginia people for their success in working on multicounty schemes. It is an excellent example of what can happen. Some of us have worked many years, and yet we are no further along at bridging county boundaries than we were at the beginning. Virginia has a good approach. Evidently they have found greater receptivity to cooperation among communities and counties than we have been able to generate in Kentucky. I see solid waste as a prime candidate for a future initiative. It might need to be coupled with water quality in some instances, but the uniqueness of the problems justify a separate initiative.

In the discussion on water quality I agree with the statement made by Al Morris that rural residents and agricultural producers have more respect for the environment than does the average person in our society. At least, I want to believe that. However, I have questions about whether our children share that same respect for the environment. If it is true that there is more respect among rural residents, it should help us in the task of developing educational programs in rural areas. I was interested in the perception of Extension by an EPA representative. From their viewpoint, Extension staff are seen as the friend of agricultural producers. We would like to agree with that image, but some of our agricultural producers sometimes question whether we are friend or foe when we push them in the direction of voluntary compliance to avoid mandatory regulations. Sometimes just raising the issue places the "black hat" on us. I would also ask us to examine where we stand as an organization when we often line up solidly behind producers in the use of chemicals and the like. Are we seen as the bad guy in the minds of the general public? I am sure we are viewed that way by a number of environmental groups. At this point we would probably conclude that environmentalists represent an extreme view and thus dismiss the concern. But it may well be that the press and the general public hold the same view.

I liked Art Hornsby's decision matrix and the addition of new factors to it. As we think through an agent's recommendation to an individual producer, I don't think at this point we have looked at such factors as life, movement, and toxicity of a chemical as part of the decision of whether that is a good recommendation. We have looked at the profit motive, the effectiveness on a particular crop, the mechanics of application and the like, but we haven't advanced our decision making to include these other factors. With the use of microcomputers and good software packages, that is now in the realm of possibilities. We need to be moving in that direction and plugging in a whole number of new factors that we haven't been considering before.

The concept of interprogrammatic planning and programming is one we often forget. All the emphasis in issue-based programming have been on interdisciplinary programming. The interprogrammatic aspects are at least as important. Many times we

have interdisciplinary efforts, but we are not bridging the program lines. When we do interdisciplinary programming we are not going far enough. With a new regional structure, we now can strive for better interprogrammatic cooperation.

When staff see a responsibility as being "in addition to" their normal role, we don't have very much success. We must be willing to say that it is an integral part of an ongoing role. Then we have a lot better chance of integrating new ideas and issues into ongoing programs. They then become everyday activities that become acceptable.

With economic survivability, I understand what Jerry Skees said about bimodal agricultural structure. I heard him talk about the need for understanding not only risk factors in production but also the marketing side. We have begun to emphasize that more, but we are very vulnerable in that area. With the focus on international trade and marketing, it comes into the picture even more strongly. I can't disagree with things like the need for policy education and leadership development. We need to support those kinds of efforts.

In the area of rural development, Lori Garkovich challenged us to think beyond just agriculture as the impetus for development in rural areas. We have to think even beyond what some of the community development people have considered. We use the term economic development, but it is not just creating new jobs. Rather it is creating a whole new infrastructure of support for that job and others. She challenged us to think in a broader sense. We can be that expertise in a rural area as a professional; we can be a source of unbiased information, but we must also be a visionary.

As I reflected back on Dave Freshwater's discussion, the idea that stuck in my mind is the political reality of garnering support for rural development efforts. Especially noteworthy is the fact that we probably cannot expect new resources, but rather we will be merely reallocating among various alternatives. If the new alternatives are more important than existing ones, then we as an organization need be able to identify them and be willing to face the reality of shifting resources from one area to another. The other point he made is the need to form coalitions with other organizations and agencies. We must speak in a national, state and county perspective in that regard.

The question that someone raised, "Are we for rural development or against it?" strikes a cord in my mind because I would ask the same question about an agricultural production issue or a biotechnology issue. In every one of these cases we are both for and against it in certain circumstances. There is good development, and there is bad development in communities. There was, and still is in some of our rural communities, a time when a job was a job no matter what type it was or how much it paid. In some cases those are the only sources of income and one can't be choosy. It may be $4.00 an hour rather that $8.00, but it is still a job. However, other communities can afford to be selective. They are going after certain types of employers and jobs -- ones that will not destroy the environment and are anxious to contribute to the community. They are holding out for the types of development that meets their needs.

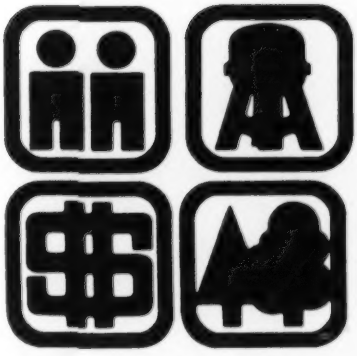
In the discussion on Low Input Sustainable Agriculture (LISA), it is difficult to argue with the four elements of sustainable agriculture that John Ikerd presented. It is a good framework. The elements are: resource conserving, environmentally sound, socially supportive, and commercially competitively. If we put those measures on most of what we're about, I think we would come back to center somewhat on some of the things we do. Maybe we have gotten off in one direction or the other from time to time. These four elements could serve as criteria against which we could examine what we are doing and help us to stay on the right course.

I also like his idea that some things can be sustainable in the short run but not in the long run, and vice versa. Something may sound fine in a two to three year time frame, but it may not be a wise decision in the long run. Or, the opposite may be true. It looks good in the long run, but is not feasible in the short run.

The discussion on biotechnology was interesting and enlightening. All of us have participated in some of these discussion over the past few years. I guess I expected a little more controversy. When we included a speaker from the private sector, we expected a little more free flowing discussion on the issues. But in a general sense, I thought we came out largely in agreement on most of the major points. All of the speakers pointed to appropriate roles for both private and public sectors. What those roles are specifically will be worked out over time, but everyone recognized that each has a role to play. Defining those roles back home is the difficult part. Nevertheless, we must continue to communicate with each other. The difficulties lie with those who have not been a party to discussions such as this and do not understand the role of the land-grant universities and what Extension can offer to the area of biotechnology.

On behalf of the Program Planning Committee, let me say that we have been very pleased with the quality of the presentations. They were very good statements, and they stimulated a lot of excellent discussion. We appreciate the participation of each of you. I hope you found the session enlightening.

The SRDC is one of four regional rural development centers in the nation. It coordinates cooperation between the Research (Experiment Station) and Extension (Cooperative Extension Service) staffs at land-grant institutions in the South to provide technical consultation, research, training, and evaluation services for rural development. This publication is one of several published by the Center on various needs, program thrusts, and research efforts in rural development. For more information about SRDC activities and publications, write to the Director.



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